

ENVIRONMENTAL ASSESSMENT BOARD



ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARINGS

VOLUME: 62

DATE: Monday, September 23, 1991

BEFORE:

HON. MR. JUSTICE E. SAUNDERS Chairman

DR. G. CONNELL Member

MS. G. PATTERSON Member

EARR
ASSOCIATES &
REPORTING INC.

(416) 482-3277

2300 Yonge St. Suite 709 Toronto, Canada M4P 1E4



Digitized by the Internet Archive
in 2022 with funding from
University of Toronto

<https://archive.org/details/31761114681398>

ENVIRONMENTAL ASSESSMENT BOARD
ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARING

IN THE MATTER OF the Environmental Assessment Act,
R.S.O. 1980, c. 140, as amended, and Regulations
thereunder;

AND IN THE MATTER OF an undertaking by Ontario Hydro
consisting of a program in respect of activities
associated with meeting future electricity
requirements in Ontario.

Held on the 5th Floor, 2200
Yonge Street, Toronto, Ontario,
on Monday, the 23rd day of September,
1991, commencing at 10:00 a.m.

VOLUME 62

B E F O R E :

THE HON. MR. JUSTICE E. SAUNDERS Chairman

DR. G. CONNELL Member

MS. G. PATTERSON Member

S T A F F :

MR. M. HARPUR Board Counsel

MR. R. NUNN Counsel/Manager,
Information Systems

MS. C. MARTIN Administrative Coordinator

MS. G. MORRISON Executive Coordinator

A P P E A R A N C E S

B. CAMPBELL	)	ONTARIO HYDRO
L. FORMUSA)	
B. HARVIE)	
J.F. HOWARD, Q.C.)	
J. LANE)	
J.C. SHEPHERD	)	IPPSO
I. MONDROW)	
J. PASSMORE)	
R. WATSON	)	MUNICIPAL ELECTRIC
A. MARK	)	ASSOCIATION
S. COUBAN	)	PROVINCIAL GOVERNMENT
P. MORAN	)	AGENCIES
C. MARLATT	)	NORTH SHORE TRIBAL COUNCIL,
D. ESTRIN	)	UNITED CHIEFS AND COUNCILS
		OF MANITOULIN, UNION OF
		ONTARIO INDIANS
D. POCH	)	COALITION OF ENVIRONMENTAL
D. STARKMAN	)	GROUPS
D. ARGUE)	
T. ROCKINGHAM		MINISTRY OF ENERGY
B. KELSEY	)	NORTHWATCH
L. GREENSPOON)	
R. YACHNIN)	
J.M. RODGER		AMPCO
M. MATTSON	)	ENERGY PROBE
D. CHAPMAN)	
A. WAFFLE		ENVIRONMENT CANADA
M. CAMPBELL	)	ONTARIO PUBLIC HEALTH
M. IZZARD	)	ASSOCIATION, INTERNATIONAL
		INSTITUTE OF CONCERN FOR
		PUBLIC HEALTH
G. GRENVILLE-WOOD		SESCI
D. ROGERS		ONGA

A P P E A R A N C E S
(Cont'd)

H. POCH	)	CITY OF TORONTO
J. PARKINSON)	
R. POWER		CITY OF TORONTO, SOUTH BRUCE ECONOMIC CORP.
S. THOMPSON		ONTARIO FEDERATION OF AGRICULTURE
B. BODNER		CONSUMERS GAS
J. MONGER	)	CAC (ONTARIO)
K. ROSENBERG)	
C. GATES)	
W. TRIVETT		RON HUNTER
M. KLIPPENSTEIN		POLLUTION PROBE
N. KLEER	)	NAN/TREATY #3/TEME-AUGAMA
J. OLTHUIS	)	ANISHNABAI AND MOOSE RIVER/
J. CASTRILLI	)	JAMES BAY COALITION
T. HILL		TOWN OF NEWCASTLE
M. OMATSU	)	OMAA
B. ALLISON)	
C. REID)	
E. LOCKERBY		AECL
C. SPOEL	)	CANADIAN VOICE OF WOMEN
U. FRANKLIN	)	FOR PEACE
B. CARR)	
F. MACKESY		ON HER OWN BEHALF
D. HUNTER		DOFASCO
B. TAYLOR	)	MOOSONEE DEVELOPMENT AREA
D. HORNER	)	BOARD AND CHAMBER OF COMMERCE

I N D E X o f P R O C E E D I N G S

	<u>Page No.</u>
<u>PAUL JONATHAN BURKE,</u>	
<u>AMIR SHALABY,</u>	
<u>MARION ELIZABETH FRASER,</u>	
<u>LYN DOUGLAS WILSON,</u>	
<u>WILLIAM OSBORNE HARPER,</u>	
<u>IAN DUNCAN MacLELLAN; Resumed.</u>	10982
Cross-Examination by Mr. Klippenstein	10982
Cross-Examination by Mr. Mondrow	11031
Cross-Examination by Ms. Kleer	11159

L I S T o f E X H I B I T S

No.	Description	Page No.
310	Document entitled, "Programmes Versus Regulations in Demand Management Applying the Total Customer Cost Test", with attached document precis.	10981
311	Precis Package	11029
312	One-page photocopy of small item from Globe and Mail.	11029
261.57	Interrogatory No. 12.14.101.	11110
313	Position Paper, Moose River/James Bay Coalition.	11158

L I S T o f U N D E R T A K I N G S

No.	Description	Page No.
267.14	Ontario Hydro undertakes to provide a list of examples of modified application which meet the total customer cost test.	11006
267.15	Ontario Hydro undertakes to provide the load shifting potential if the small hydraulic sites are not developed.	11168

1 ---Upon commencing at 10:05 a.m.

2 THE REGISTRAR: Please come to order.

3 This hearing is now in session. Please be seated.

4 THE CHAIRMAN: Sir?

5 MR. KLIPPENSTEIN: Thank you, Mr.

6 Chairman. My name is Murray Klippenstein for Pollution
7 Probe. With me is Mr. Bruce Lourie. I have prepared
8 an exhibit which I would request be identified as such,
9 to be used in aid of cross-examination.

10 THE CHAIRMAN: Number?

11 THE REGISTRAR: No. 310, Mr. Chairman.

12 Which one is that, Mr. Klippenstein?

13 ---EXHIBIT NO. 310: Document entitled, "Programs
14 Versus Regulations in Demand Management
15 Applying the Total Customer Cost Test",
 with attached document precis.

16 MR. KLIPPENSTEIN: I have also prepared a
17 document precis which I suggest just be attached to the
18 front of that exhibit. Copies of this exhibit were
19 delivered to the witnesses on Friday and copies are
20 available here for other people.

21 THE CHAIRMAN: Have you got it?

22 THE REGISTRAR: Yes.

23 Is the precis to be marked as an exhibit?

24 THE CHAIRMAN: No. It will just be
25 attached.

THE REGISTRAR: That is fine.

MR. KLIPPENSTEIN: I propose to ask a number of questions this morning about the total customer cost test and the applicability of that test in the context of regulations.

PAUL JONATHAN BURKE,
AMIR SHALABY,
MARION ELIZABETH FRASER,
LYN DOUGLAS WILSON,
WILLIAM OSBORNE HARPER,
IAN DUNCAN MacLELLAN; Resumed

CROSS-EXAMINATION BY MR. KLIPPENSTEIN:

Q. Perhaps I could begin by asking you to turn to Exhibit 3, the Demand/Supply Plan, page 7-6. And, in particular, to the third column at the top, the second bullet in that column which reads, "Changes In Customers' Operating Costs". And what is in the brackets thereafter was struck out as a correction.

My question to the panel and whoever it is that would be appropriate to answer this is: I take it the changes in customers' operating cost referred to are the present value of future changes; is that correct?

MR. SHALABY: A. Yes. If you are evaluating an option that would live for many years, all of the bullets, all of the costs are evaluated for

1 every year and then present value to the year of
2 evaluation.

3 Q. And that bullet, I take it, would be
4 savings in customers' operating costs presumably rather
5 than increases?

6 A. I think typically they are savings.
7 There would be categories at times that would increase,
8 but my understanding is that typically, there would be
9 savings.

10 Q. Now, could you explain to me why that
11 is not double-counting with the other half of the
12 equation, namely, the avoided Hydro costs?

13 In other words, you have deleted the
14 contents of the brackets; why would the whole bullet
15 not be deleted?

16 A. Well, the total customer costs would
17 include savings on Hydro's side and costs on Hydro's
18 side and savings and costs on the customers' side, and
19 that is part of the costs or savings on the consumers'
20 side.

21 What would it be double-counting with?
22 Where is that redundant or where is that counted first
23 time?

24 Q. Does that bullet not refer to
25 electricity which is not used by the customer; is that

1 it?

2 A. No. The intent of that is to say
3 operating cost, costs of changing light bulbs, costs of
4 cleaning equipment, maintaining and oiling and that
5 kind of thing. The meaning of that was the operating
6 costs associated with the more efficient equipment
7 compared to the less efficient equipment, maintenance
8 cost, that type of cost, not electricity related cost.

9 Q. I see. Thank you.

10 Now if I could refer you to the exhibit I
11 have just filed, Exhibit 310, and if I could also refer
12 you simultaneously to Exhibit 260, page 76. Exhibit
13 260, page 76 is entitled "Financial Tests", and the
14 first one being the total customer cost test.

15 Exhibit 310, which is entitled "Programs
16 Versus Regulations In Demand Management" on page 1
17 identifies a Case 1 and states:

18 "A version of the total customer cost
19 test."

20 If you could examine the total customer
21 cost test formula as stated in Exhibit 310 and tell me
22 whether you agree that it is the same as the one
23 proposed or put forward by Hydro in Exhibit 260.

24 A. It measures the same thing, yes.

25 Q. Now if you could take a look at that

1 Case 1 formula on Exhibit 310, and look at the example
2 that is identified there and just tell me if this is a
3 correct working through of that formula.

4 We have proposed an improved efficiency
5 widget which uses less electricity than the standard
6 widget.

7 Now, if the avoided total system costs
8 for that improved efficiency widget are \$21, the total
9 utility program costs for Hydro would be \$2.00 and the
10 participant costs would be \$20. Then working through
11 that formula, am I correct in the application of the
12 formula that since \$21 is not greater than \$22, that
13 widget would fail the total customer cost test?

14 A. Yes.

15 Q. If you could then turn to page 2 of
16 Exhibit 310, which is labelled, "Case 2, Provincial
17 Regulation".

18 And I would ask you to walk with me
19 through that same example, but this time assume a
20 provincial regulation mandating the improved efficiency
21 widget.

22 In that scenario, would you agree the
23 avoided total system cost for purposes of the test
24 remain the same as in the previous example?

25 A. I think the arithmetic is one thing.

1 The other more significant thing perhaps to discuss
2 first is, what are the assumptions that are well
3 understood?

4 What you are assuming here is by
5 provincial regulations, there would be no other costs
6 except participant cost. That is what that chart
7 shows.

8 Q. Well, let's look at that.

9 Am I correct in assuming that in some
10 situations, for some electrical efficiency
11 opportunities, total utility program costs would, in
12 fact, fall to zero?

13 A. Maybe but we will let the energy
14 management people address that. That is the assumption
15 that I think needs a bit of investigation.

16 Q. Let's clarify that then.

17 MS. FRASER: A. That is, I think,
18 certainly an over simplification. There may be some
19 products that -- regulation, you can sort of by virtue
20 of a regulation get rid of even the production of or
21 the sale of less efficient activities; however, there
22 are going to be compliance costs and inspection costs
23 and costs of those sort.

24
25

...

1 [10:15 a.m.] It's also the cost in terms of
2 determining what is in the regulation, what the
3 standards are, how you test according to that standard,
4 Ontario Hydro has always participated in that process
5 with the Canadian Standards Association. We are
6 certainly participating in that process with the
7 Ontario Energy Efficiency Act. We have helped the
8 Canadian Earth Energy Association develop installation
9 standards for heat pumps, for example. So there
10 definitely are costs involved in all of those things
11 that right now accrue to the utility.

12 In terms of other provincial regulations
13 and, you know, if you are just saying an either or
14 situation, and all those costs then would-- Hydro then
15 would not be involved in any of those things, those
16 costs would still be accrued by somebody in order to
17 put that regulation into place. So, you would almost
18 need another -- it may not be the utility program cost,
19 but something there called regulation costs, or
20 whatever.

21 Q. I understand your point. Let me just
22 focus on what my question was. Assume a provincial
23 regulation, there will be some cases where the total
24 utility program costs do in fact go to zero; is that
25 right? There will be some cases?

1 A. That will depend on how you wanted to
2 implement it. If you said from now on Ontario Hydro
3 does not get involved in any standard activity, which
4 we have been for years and years, then that would be a
5 big change. It would involve testing, standards
6 development, work with the CSA. So, there are costs
7 involved in that.

8 Q. I am talking about a situation where
9 there is already an existing regulation in place passed
10 by, for example, the provincial government, since
11 therefore the standard has already been developed and
12 so on.

13 A. But that's still a cost of the
14 efficiency.

15 THE CHAIRMAN: I guess perhaps - I hope I
16 am following if well first thing Monday morning - would
17 it be fair to say that if a standard for the same
18 widget were put into place, that the program costs
19 would be less than they otherwise would be absent a
20 standard?

21 MS. FRASER: I think that's probably true
22 but they wouldn't be zero.

23 MR. KLIPPENSTEIN: Q. Would you agree
24 that in many cases they would be substantially less?

25 MS. FRASER: A. I don't think we have

1 done enough research on that to generalize. There are
2 certain regulations that are in place; for instance,
3 right now the regulations for refrigerators really
4 don't go very far at all in terms of, you know, you are
5 not really getting an improved efficiency widget out of
6 those regulations at this point in any sense of the
7 word. So your assumptions about total system avoided
8 cost may be not appropriate in that case.

9 Q. If I substitute for zero the words
10 "total utility program costs less one dollar", that
11 would likely be an accurate description in most cases;
12 would you agree, conceptually? There is likely to be
13 in most cases a drop in that particular figure in the
14 scenario of a provincial --

15 A. It could be, it depends on the
16 product that we are talking about. Some things it's
17 quite easy to put regulations around, some things it's
18 virtually impossible to put regulations around. So
19 it's a continuum, right.

20 Q. I am assuming that there is a
21 provincial regulation in place, therefore that means
22 that this particular product is susceptible to
23 regulation, the provincial government does in fact --

24 A. If there was a regulation in place
25 then the avoided total system costs are zero because we

1 have already factored that in. There are no facilities
2 being avoided because they were never planned to be
3 built if the regulation already exists.

4 Q. Let me just focus on the total
5 utility program costs. That's what my question related
6 to.

7 Assuming a widget susceptible to
8 regulation and that a regulation is in fact passed,
9 would you agree that in most cases the total utility
10 program costs are less than what they would be without
11 the regulation?

12 A. Yes, I agree with that.

13 Q. Now, would you agree that if in fact
14 in the scenario of a provincial regulation being passed
15 and the total utility program costs therefore being
16 less in most cases than they otherwise would be, that
17 it is now likely that electrical efficiency
18 opportunities which would not have passed the total
19 customer cost test now do so?

20 MR. SHALABY: A. Some would, yes.

21 I think the testimony of this panel has
22 been that many options comfortably pass the total
23 customer cost test. I don't think we have too many
24 cliff hangers that would come one way or the other
25 because of a small change in a program test. But

1 conceptually you're right.

2 Q. Thank you.

3 If you could now turn the page to page 3
4 of Exhibit 310, which is identified as Case 3.

5 Now, I suggest to you again the identical
6 scenario of Case 2, namely a provincial regulation
7 applicable to a technology that is susceptible to
8 regulation. And would you agree that in some cases the
9 benefit of such a regulation -- or there may be a
10 benefit of such a regulation accruing to the provincial
11 government in addition to the benefit accruing to Hydro
12 in terms terms of avoided cost?

13 A. Your example here is of water
14 savings?

15 Q. The example on that page is an energy
16 efficient showerhead, if you think of that example.

17 A. Whether its provincial or municipal
18 government, I don't know who incurs the water treatment
19 costs, but yes, there are water treatment and sewage
20 savings associated with the showerhead program.

21 Q. And assuming that to be the case, if
22 you can look at the formulae in Case 3, would you agree
23 that in using that formulae it would be appropriate to
24 identify on the same side as avoided total system costs
25 some value attributable to the avoided government

1 costs?

2 A. If you do that then what you are
3 describing is something approaching avoided societal
4 costs, for example, total customers of water and
5 electricity costs. You are enlarging the concept a bit
6 and capturing more than electricity savings.

7 Q. That's right.

8 A. Your capturing electricity and water
9 savings.

10 Q. That's right. And would you agree
11 that in doing so with this formula is true to the
12 concept of the total customer cost test as used in Case
13 1, for example?

14 A. It is but what you are doing is you
15 are enlarging, you are defining the customer not to be
16 the customer for electricity but a customer for
17 electricity and water services. And you are measuring
18 the avoided costs for the services of electricity and
19 water together. So, it is an extension of the test.
20 from a strictly electricity service cost to something
21 else added to it.

22 Q. And would you agree that if you used
23 that formula now including the avoided government cost,
24 an electrical efficiency opportunity which previously
25 would not pass that test now might?

1 A. If he chose to take that perspective
2 and used that as a criterion for judging programs, then
3 you're right, yes.

4 Q. Thank you.

5 If you could turn to page 4 now, Exhibit
6 310. Case 4, as you can see, adopts the formula from
7 Case 3 and adds one other factor. Would you agree that
8 if a government, whether the provincial government or
9 another government, mandates a particular electrical
10 efficiency opportunity, there is likely to be increased
11 economies of scale in the production of that electrical
12 opportunity?

13 A. If he assumed higher penetration,
14 more product available. I assume my colleagues from
15 the marketing side would have a comment.

16 MR. MacLELLAN: A. If you are assuming
17 that that product is not yet a mature product in the
18 marketplace, then you are probably right.

19 Q. And that would apply to many of the
20 products which we typically examine as electrical
21 efficiency opportunities; is that correct?

22 A. Yes, frequently increased quantitites
23 or productions could help in terms of price.

24 Q. But my question is, in fact that is
25 characteristic of many of the electrical efficiency

1 opportunities we examined. They are not mature
2 products; they are relatively new?

3 A. Yes, many of them are new.

4 [10:25 a.m] Q. Now, can you look at the formula
5 listed under Case 4 there and tell me if I have
6 correctly incorporated the economies of scale which
7 would result if an electrical efficiency opportunity
8 was mandated?

9 In other words, it is likely that the
10 participant costs would be reduced as compared to what
11 they otherwise would be; is that correct?

12 MR. SHALABY: A. You applied it
13 correctly. I'm not going to quibble on whether at the
14 end you say lower priced showerhead or lower cost
15 showerhead. Whether the lower costs would be passed to
16 consumers or not is another matter.

17 Q. All right. Thank you.

18 If I could then ask you to turn to page 5
19 of Exhibit 310.

20 Would you agree that the increased
21 penetration of the marketplace by an electrical
22 efficiency opportunity that is due to a regulation may
23 well also avoid other environmental costs; and I am
24 using the example in that Case 5 of an avoided emission
25 control or avoided emissions, rather.

8 So to the extent there is emission
9 control costs to be avoided, they are part of the
10 avoided costs that we calculate. So there may be a bit
11 of double counting in that last equation that you show.

12 Q. Are there potentially other avoided
13 environmental costs other than emissions which result
14 in a higher penetration of an electrical efficiency
15 opportunity?

19 DR. CONNELL: Mr. Klippenstein, I wonder
20 if I could just put a question to the panel to clarify
21 my understanding of the water treatment issue.

22 This seems to me to be rather
23 counter-intuitive that further regulatory constraints
24 would lead to lower cost. I suppose it would be
25 conceivable, let me put this to you as question, that

1 introduction of a regulation might restrict competition
2 in the design of a certain widget, could lead to a kind
3 of quasi monopoly or it might discourage new suppliers
4 from coming into the market.

5 Have you encountered any phenomena such
6 as that? On balance, which do you think is more
7 likely? The reduced price or the increased price?

8 MR. MacLELLAN: Again it depends on the
9 maturity of the product in the marketplace. In the
10 case of showerheads that is a fairly easy one to argue,
11 that there would be no negative impact. There are many
12 manufacturers in the marketplace; they offer many
13 different models and the market share of those more
14 efficient showerheads is quite high.

15 So I do not think you would encounter a
16 problem where scarcity of supply would force the price
17 of the product up. So in that case I think the
18 assumption holds.

19 There are other cases, though. Let us
20 say the government mandated that the only kind of heat
21 pumps allowable were dual fuel heat pumps or bivalent
22 heat pumps that we have talked about before. There's
23 really only one manufacturer of those. He has a pretty
24 tight patent on the product it seems and that's a case
25 where they would not be available, there would be a

1 real scarcity of supply, you would have a quasi
2 monopolistic situation as you say. So you have to look
3 at it product by product.

4 Some cases where it is quite a mature
5 product it can work. There are a lot of other cases
6 where there would be some real risks.

7 MR. KLIPPENSTEIN: Q. If I can
8 follow-up on that, Mr. MacLellan.

9 Presumably a regulation would not specify
10 a particular product made by a particular manufacturer.
11 Would you agree?

12 MR. MacLELLAN: A. No, but it would
13 probably specify a technology.

14 Q. Would you agree that it is unlikely
15 that a regulation would specify a technology that is --
16 a specific technology that is patented?

17 A. We hope not but that would be
18 ignoring some real potential as well.

19 Q. Would you agree that if a regulation
20 did not specify a particular patented technology the
21 field remains wide open for anybody who is able or
22 willing to enter the market to come up with some other
23 product that will meet that regulation?

24 A. It remains wide open, but that does
25 not mean it is easy to do.

1 There are reports around that say that
2 there is likely to be a two year shortage of compact
3 flourescents, for example. This is world wide
4 shortage. So it is not like a lot of these things have
5 easy entry into the marketplace. So that is why
6 regulations have to consider the pace at which
7 manufacturers can adhere to the regulations.

8 But, yes, I hope that any regulatory body
9 would take that into account.

10 Q. And therefore the normal market
11 forces would still be applicable to such a regulated
12 efficiency opportunity?

13 A. Yes, and sometimes consideration of
14 those normal market forces actually hurt the efficiency
15 effort.

16 The example is the fact that the U.S.
17 Department of Energy is instituting a number of
18 efficiency regulations for appliances January 1st,
19 1993. The Ontario government has decided to let
20 Ontario manufacturers have a full year in order to
21 catch up and change their assembly line and retool in
22 order to achieve.

23 That is a case where for a year there is
24 a possibility of Ontario having far less efficient
25 product available than is available across the border.

1 So again another thing to keep in mind when you are
2 talking about free market forces.

3 Q. But in that case there will be a
4 number of manufacturers producing the product that
5 there will be no monopoly. There will in fact be
6 competition, is that right?

7 A. Yes. Maybe not in Canada, will they
8 be producing, but there will be a number producing.

9 Q. Thank you.

10 MR. BURKE: A. I think there is another
11 issue related to -- and it really depends on the
12 context in which you are talking here.

13 But if standards replaced programs
14 completely there are a lot of positive effects of
15 programs to push the frontiers of efficiency gain
16 beyond the said levels of standards that would perhaps
17 mean that if the only force for efficiency improvement
18 were regulations, that the full efficiency gain and the
19 market forces at work to exceed the regulated levels
20 would be curtailed. And so you would have to somehow
21 maintain an environment in which producers had an
22 incentive to continue to improve efficiency beyond the
23 regulated standards.

24 Q. Just to make it clear, my questions
25 do not in any way detract from that possibility, and am

1 I correct in thinking that if I allow the possibility
2 of continuing programs that exceed the regulations we
3 are discussing here, that would not affect the
4 scenarios which I have just propose to the panel. Am I
5 correct?

6 A. I think it is something you have to
7 design carefully, but all I am trying to indicate is
8 that that is an issue to be carefully considered in the
9 course of moving to higher amounts of regulation in the
10 marketplace.

11 Q. I do not dispute that, but my
12 question is: These programs that you speak of do not
13 affect the formulas that I have just worked through?

14 A. No, they do not affect the formulas.

15 Q. Thank you.

16 Now, if I could ask to you turn to page 6
17 of Exhibit 310.

18 Would you agree that the total customer
19 cost tests can be thought of as a line that separates
20 the economic electrical efficiency opportunities from
21 the non economic electrical efficiency opportunities
22 and that I can draw that as a circle to encompass the
23 cases which pass.

24 Does that make sense to you, as I have
25 done in page 6.

1 MR. SHALABY: A. I think the illustration
2 serves to show how the different cases stack up. I do
3 not want to get into what is economic and the lines.
4 [10:36 a.m.] All of that is treacherous territory
5 first thing Monday morning, as the Chairman said. I
6 think your diagram shows the relationship of the cases
7 one to another. I accept that.

8 Q. Okay. Would you agree that --

9 A. We called it the onion diagram.

10 Q. The onion diagram. I hope it doesn't
11 cause us to weep this morning. (Laughter)

12 Now, Mr. Shalaby, I think when I put Case
13 2 to you, you agreed that some electrical efficiency
14 opportunities would pass under the formula on Case 2
15 when they wouldn't under Case 1.

16 A. Yes.

17 Q. Yes. Now, would you agree that that
18 can be represented by moving the circle representing
19 Case 1 on page 6 to the circle representing Case 2, as
20 if you would, there is now a wider field of electrical
21 efficiency opportunities which may pass the total
22 customer cost test?

23 A. Yes

24 MR. B. CAMPBELL: Mr. Chairman, just
25 before my friend goes too far down this, I would point

1 out that Mr. Shalaby's evidence was that conceptually,
2 that was correct, but I do recall him specifically
3 saying that, in fact, there were not many technologies
4 on that kind of margin. I don't want that overlooked
5 in my friend's question.

6 MR. SHALABY: This gets us into whether
7 this is to scale or not. That is yet another --
8 conceptually, what you are saying is conceptually
9 correct.

10 MR. KLIPPENSTEIN: Q. Okay. It is
11 conceptually correct, but we don't know how many or
12 indeed whether there are any electrical efficiency
13 opportunities which fit within that expansion from Case
14 1 to Case 2; is that correct?

15 MR. SHALABY: A. Yes. That is another
16 matter to go into the details. I think what my point
17 was, there aren't that many that are border cases that
18 need yet another little bit to come in. But I am
19 agreeing with you on a conceptual basis that that is
20 correct, yes.

21 Q. And, in fact, in order to determine
22 whether -- well, let me rephrase my question. Do you
23 know how many would fit within that expansion?

24 A. Well, I think if we go back to
25 exhibits that showed the supply curves that were

1 presented in Exhibit 76, for example, that would be a
2 good indication of what options are at the margin and
3 could benefit from a slight improvement in the total
4 customer cost test.

5 In fact, we found it difficult to find
6 examples of things that didn't pass the total customer
7 cost test and there are only few things that don't.

8 Q. In fact, the way to determine whether
9 there are any that would pass the total customer cost
10 test under Case 2 which did not under Case 1 would be
11 to run the calculations again but this time reducing
12 the total utility program cost; is that correct?

13 A. Yes.

14 Q. Have those calculations been done?

15 A. Not to my knowledge, not in that
16 format.

17 Q. So, in fact, if you applied the
18 formula as in Case 2, you might discover there is other
19 electrical efficiency opportunities which you have not
20 included so far; is that correct?

21 A. Maybe you could refer to Mr. Burke.

22 MR. BURKE: A. What we have done is do
23 both sides of the test; that is, we do have the tests
24 done from the perspective of avoided total system
25 costs. We have that number and we have the sum of

1 total utility program costs plus participant costs.

2 So that I can suggest to you that there
3 are very few options where the difference is large
4 either way; that is, it is not like we have not even
5 screened some measures because we thought they would be
6 too expensive before we did so. That seemed to be the
7 implication, that we wouldn't know whether something
8 was cheaper now under this new approach because we
9 hadn't even considered it in the first place.

10 We have screened all the measures that we
11 are aware of in this broad cost area and I think it is
12 fair to say we would know whether or not there are some
13 that are within the margin represented by the total
14 utility program costs and there are very few.

15 Q. Can you list them?

16 A. Well, I can give you some examples.

17 Q. Would you?

18 A. As we have discussed at various
19 points, there are various applications of T8 lamps that
20 become economic or are currently uneconomic and could
21 conceivably pass.

22 Q. You said "could conceivably pass". I
23 guess my question is whether they would pass in a Case
24 2 formula?

25 A. Well, it depends how much the total

1 utility program costs are. And that information I
2 don't have specific to each program, but generically,
3 we are talking \$350 a kilowatt in the commercial
4 sector.

5 Perhaps the best way to do this would be
6 if I produce some examples later on. I think to
7 produce a comprehensive list of all those things on a
8 border line would be difficult in some cases because
9 the technologies have been evaluated for specific
10 applications and we couldn't redo those so well.

11 But in a commercial sector, I think, and
12 in the residential sector, I should be able to give you
13 some examples of options that were screened out and
14 probably where the margin is of the order of the total
15 utility program costs.

16 Q. I think that is important and I would
17 appreciate getting that, those examples, If I may.

18 MR. B. CAMPBELL: Do you need an
19 undertaking number for this then?

20 THE REGISTRAR: 261.57, Mr. Chairman.

21 MR. B. CAMPBELL: I think it is not an
22 interrogatory number. It would be an undertaking
23 number. And our records at least show it should be
24 267.14.

25 THE REGISTRAR: That is correct.

---UNDERTAKING NO. 267.14: Ontario Hydro undertakes to provide a list of examples of modified application which meet the total customer cost test.

MR. D. POCH: Mr. Chairman, I hesitate to interrupt my friend's cross. I had thought during my cross-examination that there were a number of examples developed which were of a different type, which were of the same technology but in greater application.

It might be cost effective to put in a second compact fluorescent light bulb or a third or a fourth or eight, as we saw some utilities doing, depending on where avoided cost gets.

And I am wondering if I could impose, to avoid any need to come back and ask to re-cross, if that undertaking could simply be expanded to include Hydro's provision of their view of the cost effective potential for efficiency; the extension of that curve, if you will, to capture both more as well as different kinds of technology as avoided cost changes, then I think that would be clear and I wouldn't need to come back and clarify that yet again. I don't know if that is clear, Mr. Burke.

MR. BURKE: I don't understand what you are getting at, I have to say, and really, all I am proposing -- offering to do, because we have done a

1 large number of total customer cost tests' results and
2 there are some that didn't pass, I was going to provide
3 what those were, and that is as far as I think I can
4 reasonably go.

5 MR. D. POCH: Just to clarify and then I
6 will leave it with the Board, I thought it was clear,
7 apparently not, to some, that there are situations
8 where a technology which is deemed cost effective is
9 not cost effective. And Hydro's witnesses told us
10 about the second or the fifth, whatever, compact
11 fluorescent in a residence might not be cost effective
12 because that light bulb wouldn't be on enough in a
13 given day.

14 And if Mr. Burke is undertaking to extend
15 his analysis of what is out there that might be cost
16 effective if avoided cost went up, I would assume
17 there's two categories: There's new technologies or
18 technologies that they haven't already captured and
19 there is greater application of the technologies they
20 are grappling with because there will be more
21 situations where the application of this technology
22 becomes cost effective.

23 THE CHAIRMAN: I thought the current
24 discussion was confined to those items which had failed
25 the total customer cost test because of the magnitude

1 of the program costs and that what would be the effect
2 of a reduction in program costs because of the
3 introduction of standards in making further technology
4 eligible.

5 I didn't take the question went any
6 farther than that and, of course, as nobody knows, you
7 have got to know, I would think, have to know a) what
8 the standard is and how far the standard goes and then
9 make some estimate about the program costs. That would
10 be rather a speculative venture right at this
11 particular time, other than the ones that have already
12 been captured in the overall analysis.

13 So, I would think that all Mr. Burke was
14 saying was that he would give the technologies that
15 were close to that.

16 MR. D. POCH: Thank you, Mr. Chairman. I
17 had obviously taken Mr. Klippenstein's request as
18 broader than that, as sort of extending the cost curve.

19 THE CHAIRMAN: If it was, I may have
20 misunderstood him. I thought it went no farther than
21 that.

22 MS. FRASER: Yes. Not to restate Mr.
23 Burke's evidence, but I think applications are included
24 in your list, like the T8s and religious buildings is
25 an application issue as opposed to a technology issue.

1 MR. BURKE: I will provide the examples I
2 have. That is what I was offering. I am really not
3 trying to create an open-ended question here which is,
4 I think, what Mr. Poch was creating.

5 We have done a fair number of total
6 customer costs tests on technologies. And to the
7 extent that we have results and they do not pass, I
8 will give you them and by how much they did not pass
9 and if that is satisfactory...

10 MR. KLIPPENSTEIN: I appreciate that and
11 I think you have correctly understood my question.

12 I do appreciate a list of examples, but
13 my question, I would hope, would not result in a bunch
14 of numbers that I can crunch at home one evening.

15 Q. I just want to make sure that I am
16 correct in understanding that if you run the total
17 customer cost test with the assumption of provincial
18 regulations, this time substituting a new realistic
19 estimate of total utility program costs, we now would
20 have technologies that passed. I have got that right?

21 MR. BURKE: A. I don't think there would
22 be any cases where new technologies would pass. It
23 would be cases where applications of the technology in
24 areas where it was previously uneconomic might become
25 economic.

1 I mean, I don't make any guarantees until
2 I look at the numbers that there is even any examples
3 that fall into that category; but nonetheless, we have
4 screened a range of technologies and now I can give you
5 results where they were not economic.

6 Is it fine if I just restrict the
7 examples to areas where standards might be applied as
8 in, for instance, Exhibit 258, we gave the list of
9 technologies where standards were potentially
10 applicable and just looked at those particular ones?

11 Q. Definitely. The question only
12 applies to technologies which are amenable to
13 standards.

14 A. Okay, fine, good.

15 MR. B. CAMPBELL: There was one little
16 catch in what Mr. Klippenstein said that I am going to
17 put on the record right now. We will have to make, I
18 assume, Mr. Burke, in responding to that undertaking
19 some assumptions about the potential reduction in
20 program costs. They will be pure and simple
21 assumptions.

22 As the testimony has already stated,
23 there is a potential for a regulation to have a very,
24 very -- it could range from nothing to a significant
25 impact on program costs. That is the evidence and we

1 will have to make some assumption about that. I think
2 all we can reasonably be asked to do in that case is be
3 clear about the assumption we are making in that
4 respect and I will ensure that that is done.

5 THE CHAIRMAN: Well, the assumption that
6 Mr. Klippenstein put in was that program costs are
7 reduced to zero. Now, the evidence is that that may
8 not necessarily follow, but I suppose if you had made
9 that assumption, then you would get all the possible
10 ones that might fall into that, then they could work on
11 it from there.

12 MR. B. CAMPBELL: I have no difficulty
13 with that. I just want to be clear that when the
14 answer comes back, it is going to have to address that
15 point quite specifically so that we all know what we
16 are working from

17 THE CHAIRMAN: It is clear the evidence
18 is that nobody knows what it will be, but it will
19 certainly be no less than zero. (Laughter)

20 MR. B. CAMPBELL: I think that is safe.

21 MR. KLIPPENSTEIN: Thank you, Mr.
22 Chairman.

23 Q. I am not asking for an unrealistic
24 example. And if the answer is not zero, then don't use
25 zero.

5 [10:50 a.m.] MR. B. CAMPBELL: I mean, Mr. Chairman --

13 I would suggest it should be zero and
14 then that gives Mr. Klippenstein a full range of
15 possibilities; he can do what he likes with it when he
16 comes to put in his case.

17 MR. KLIPPENSTEIN: Q. Now, if I could
18 ask the panel again to look at page 6 of Exhibit 310,
19 the diagram. The members of the panel have, as I
20 understood, agreed that in Case 2, the circle
21 representing Case 2 would in fact conceptually be
22 outside of Case 1. And that Case 3, the circle would
23 conceptually be outside of Case 2 or at least outside
24 of Case 1. With respect to Case 4, that there would at
25 least in many cases be applicable economies of scale.

1 Am I correct in concluding that if you
2 ran the total customer cost test with the modifications
3 listed in these cases, there is likely to be at least
4 some technologies which now pass which didn't before?

5 MR. SHALABY: A. Yes.

6 Q. Did I understand correctly that that
7 was a "yes"?

8 A. Yes.

9 Q. Could I then ask you to turn to --

10 A. -- of our discussions, of course.

11 Q. Could I then ask you to turn to
12 Exhibit 258, page 6, Table 4.

13 A. I am wondering whether we have five
14 cases because we just finished five months of hearing
15 or is that a coincidence?

16 Q. Exactly, yes.

17 A. Today is the fifth month.

18 Q. Now, on Table 4, the column entitled
19 EEI potential before FS, in other words, the electrical
20 efficiency improvement opportunities potential before
21 Fuel Switching for all sectors total 6,380 megawatts, I
22 believe. Would you agree that if you ran the total
23 customer cost test with the modifications suggested in
24 the various cases, that number is likely to be too low?

25 MR. BURKE: A. Well, just a point that

1 needs to be clarified. The numbers as they stand in
2 this exhibit are consistent about Exhibit 76, and as we
3 pointed out at various points, the values for potential
4 in Exhibit 76 did not net out the effect of the
5 standards that were already captured by the 1990 load
6 forecast. So the standards that are currently either
7 on the books or fully anticipated to come into effect
8 by 1994, including the refrigerator standard, are
9 already captured in the 1990 load forecast and reduce
10 that 6,380 number to about 6,200. Given that, there
11 would be some increase -- Wait a minute, to potential?

12 Q. Yes.

13 A. There wouldn't be any change to
14 potential at all.

15 Q. Now, if you run the total customer
16 cost test --

17 A. I'm sorry, the total customer cost,
18 yes. Possibly a small amount.

19 Q. Thank you, Mr. Burke. A small
20 increase possibly?

21 A. Yes.

22 MS. FRASER: A. As Mr. Shalaby pointed
23 out, by the time you get down to six you are not
24 talking about the total customer cost test from the
25 perspective of total electricity customers anymore.

Q. That's right. Would you agree that it is perfectly rational for the provincial government to apply the tests as we have outlined them in Cases 2 to 5?

A. You can apply this sort of test using any sorts of perspectives that you wish.

Q. But would you agree that it would be reasonable for the provincial government in forming its regulations to apply the tests as we have set them out in Cases 2 to 5?

A. That would be an issue for government policy. I'm not sure how they go about doing it now. Similar kinds of cost benefit analysis are done.

Q. You, members of the panel, have stated in the past that Ontario Hydro is willing to assist in promoting and developing aggressive standards for electrical efficiency opportunities. I assume that's correct?

A. Yes, it is.

Q. And it would be appropriate then for Hydro to assist the provincial government in running tests, as you and I have just discussed, to determine what the effect of running Cases 2 to 5 would be; in other words, to do those calculations for the provincial government.

1 MR. SHALABY: A. We do not have all the
2 information to run those tests.

3 Q. But you would likely have some of it?

4 A. Some we might, yes.

5 Q. And to the extent you have the
6 information, it would be in line with Hydro's policies
7 to assist the government to run through these tests as
8 in Cases 2 to 5 to determine what electrical efficiency
9 opportunities now would pass; is that right?

10 MR. WILSON: A. I think the simplest
11 thing to say about the questions you are asking here is
12 that we are prepared to do any number of things to
13 assist the provincial government. They may not want us
14 to do this, but it would seem reasonable to me that we
15 would offer information we have. If they are going to
16 accept that assistance, we would likely offer it, and
17 to the extent that we are be available to provide it,
18 it would be helpful.

19 Q. To pick an example, I think Mr. Burke
20 has agreed that using some of the total customer cost
21 tests as set out in Exhibit 310 might result in an
22 increase in potential EEI.

23 Would it not be reasonable for Hydro to
24 run the Case 2 formula, supply that information to the
25 provincial government so the provincial government can

1 identify which new electrical efficiency opportunities
2 might now be beneficially regulated; is that
3 reasonable?

4 A. I expect that we will work with the
5 provincial government to identify the areas, from our
6 perspective at least, that regulation would be suitable
7 for it. There are a lot of different perspectives on
8 what should be regulated, and we will have one view.

9 MR. BURKE: A. I should clarify, I don't
10 think we are going to identify new technologies. We
11 are only going to identify applications of the
12 technologies that were previously uneconomic that
13 become economic.

14 Q. I'm sorry, thank you for that
15 correction. I believe the fact that the potential EEI
16 may be increased is not affected by that correction.

17 A. Yes.

18 MR. MacLELLAN: A. We are also working
19 with the provincial government now on regulations. We
20 are not using a formula per se, but we are having
21 indepth discussions about appropriate levels of the
22 plant's efficiency, for example, based on our knowledge
23 of the market, and to some extent our avoided costs,
24 and their knowledge of the market and their costs. So
25 that discussion is going on now and has been going on

1 for years. We just aren't using a formula.

2 Q. Has Hydro said to the provincial
3 government, "We have run the Case 2 formula, if you
4 pass a regulation, these are now appropriate, these
5 applications are now appropriate for regulations." Has
6 that happened? I presume from our discussions it
7 hasn't?

8 A. Not in the case of appliances, not in
9 that way, no.

10 MR. BURKE: A. I think the major reason
11 is that what we are talking about is not a significant
12 effect and really won't make much difference, and that
13 would be clear from the examples. But it is not a
14 significant issue because of the shape of the load
15 reduction curves for each of the segments, and in
16 particular where regulations are applicable.

17 Q. Would it not be possible for Ontario
18 Hydro to discuss with the provincial government Case 3,
19 which is page 3 of the Exhibit 310?

20 MS. FRASER: A. Well, we have discussed
21 your particular example with the government in terms of
22 the showerhead program, the Ministry of Environment in
23 terms of discussions, and they are pursuing aggressive
24 promotion of energy efficient showerheads as well
25 through an information campaign.

MR. MacLELLAN: A. We are also discussing the idea of regulating the flow rate of showerheads with the group that does the plumbing code, for example. We have had a number of conversations with them on that. So yes, we are talking about this.

Q. Thank you.

Am I correct in understanding - and leaving the total customer cost test now - that the Demand/Supply Plan, including all the updates to this date, assume that there will be no further energy efficiency regulations other than the regulations specifically mentioned in the material so far?

MR. BURKE: A. Well, for the basic load forecast the regulations have been laid out that we have assumed, and then in Exhibit 258 we hypothesized in some of these scenarios additional standards which were not specific to particular products or technologies but which had the effect of increasing the penetration rate to 100 per cent for some market segments. So that impact is captured in Exhibit 258 and there are two cases of 50 per cent standards and 100 per cent standards referring to whether the measures went to 50 per cent of the maximum economic efficiency gain or the full hundred per cent.

Q. Am I correct in understanding, the

1 latest energy efficient regulation which is factored
2 into the plan as it now stands is somewhere around
3 1994/1995; is that correct?

4 A. The latest one is the 1994
5 refrigerator alignment with the U.S. 1993 standard.

6 Q. And so this plan assumes that there
7 will be no further electrical efficiency regulations
8 after 1994?

9 MR. B. CAMPBELL: Isn't that the same
10 question that was just asked? Mr. Burke has exactly
11 explained that that is correct for the basic load
12 forecast, but is not true for the scenarios that have
13 been put forward in Exhibit 258. Haven't we just dealt
14 with that?

15 MR. KLIPPENSTEIN: My understanding is
16 that we haven't.

17 MR. B. CAMPBELL: It sounded to me like
18 the identical question.

19 THE CHAIRMAN: Perhaps to clarify, we can
20 straighten it out.

21 MR. BURKE: Exhibit 258 contains the
22 assumption that standards come in in 1995, at either of
23 two levels for the residential sector and the
24 commercial sector, and so those scenarios include a
25 significant increase in the amount of regulation of

1 product performance.

2 MR. KLIPPENSTEIN: Q. Thank you for
3 correcting me on that date.

4 My question now is, the Demand/Supply
5 Plan, the basic load forecast also Exhibit 258, all
6 assume there will be no new energy efficiency
7 regulations after 1995. Am I understanding that
8 correctly? After the ones listed in Exhibit 258, which
9 are to be in place by 1995; is that right?

10 MR. BURKE: A. I see what you are
11 saying. Assuming full implementation in 1995, have we
12 said anything about beyond 1995?

13 Q. That's correct.

14 A. No. But in the case where we have a
15 hundred per cent efficiency, the standard is set at the
16 maximum economic efficiency level for that end use.
17 There are no remaining standards that could be set that
18 we believe -- that will have exhausted the
19 opportunities we can identify today for standards, if
20 we go to that full 100 per cent level, which I think
21 does not happen in Case C but happens in Case D.

22 Q. Would you not agree that electrical
23 efficiency is likely to undergo a natural improvement
24 over this period to 1995 and including beyond 1995 for
25 the rest of the plan period?

1 [11:07 a.m.] A. Yes, and that's imbedded in the basic
2 load forecast.

3 Q. But nowhere here has Hydro assumed or
4 allowed for any new electrical efficiency regulations
5 which may take place after 1995?

6 A. Well, this may be getting into a
7 point that we have discussed several times, which is
8 the extent to which one can project technology change.
9 And our approach has been not to project technology
10 change and to essentially view the amount that is in an
11 increment to the natural and the basic load forecast as
12 what we can estimate today with a snapshot approach to
13 technology as it exists today, assuming that the
14 technologies that are in the basic load forecast will
15 evolve just as the ones which we might have to induce
16 or apply standards to would evolve, but the magnitude
17 of the impact is best estimated as we have done using
18 information that is known today.

19 So that projection beyond 1995, that is,
20 as I understand what you are question is implying, that
21 there is a potential for greater impact from standards
22 because there would be new efficiency technologies that
23 could be regulated.

24 That is the point that we do not agree
25 with. We essentially feel that if there are new

1 technologies, that that will apply both to what can be
2 induced to regulated and what will occur naturally and
3 that the net, which is what we are estimating here for
4 the potential induced, is best estimated again as we
5 have done.

6 Q. I am not sure I understand your
7 answer, Mr. Burke. I will just repeat my question
8 again and I may not be understanding things.

9 Am I correct that this plan, including
10 all the documents, including Exhibit 258, assume that
11 there will be no new electrical efficiency regulations
12 after the ones passed in exhibit -- or the ones listed
13 in Exhibit 258 are passed in 1995?

14 A. Well, my answer was that in Case D,
15 which is a case that moves to a hundred... The answer
16 is, yes, there will be no new ones and the reason for
17 it is there is no potential for new ones in terms of
18 having load impact.

19 It is conceivable that there may be new
20 regulations passed, but what we are saying is that the
21 impact in terms of load, we believe is best estimated
22 the way we have already estimated them in Case D, for
23 the hundred per cent standards case. And I think there
24 is further explanation or rationale for that in the
25 direct evidence that I gave.

1 THE CHAIRMAN: Let me make sure I
2 understand. Maybe I will confuse it.

3 You take what you see today and use that
4 as your basis because some of those may develop and
5 some will not, and so you think that their best way of
6 judging it is to take what you see today and work on
7 that knowing that there will be some pluses and minuses
8 down the road. Is that a --

9 MR. BURKE: Well, if the pluses and
10 minuses refer to the induced EEI, yes. That is, we
11 assume that there will be evolution in technology which
12 will make efficiency improvement technology cheaper
13 through time so that some things that we consider
14 requiring inducement today will not require inducement
15 in practice 10 years from now.

16 It may very well be that T8s will be
17 extremely cheap 10 years from now and everybody will
18 install them without an incentive, but it is also the
19 case that there will probably be some new lighting
20 technology available 10 years from now which is quite
21 expensive, which is not naturally taken up by the
22 market at that point in time, which we could be
23 inducing at that point in time.

24 So for the purposes of estimating that
25 net impact of our programs or standards, if that was

1 the rout we were going, the effect, we feel, is best
2 captured by this difference between what we can observe
3 today as the maximum economic technology to induce and
4 that which will occur naturally. And the assumption
5 underlying that is that simply that the rate of
6 technological change will affect both of these ends of
7 the spectrum at the same rate.

8 Until we have some evidence to say that
9 natural technologies will evolve faster or slower than
10 the maximum economic technologies, this is the best
11 assumption to make.

12 At some point in the future we may feel
13 that technology is evolving extremely rapidly at the
14 expensive end of the range and we might want to change
15 our perspective. But at this point in time we have no
16 basis for that, so we are assuming that both the
17 technology -- that electrical efficiency improvements
18 become essentially more cost effective at equal rates
19 through the spectrum of technologies.

20 MR. KLIPPENSTEIN: Q. I did not
21 understand your answer, but let me just make sure I do
22 understand one thing.

23 One of your assumptions is that no
24 government, 6 or 8 or 10 years from now, will pass new,
25 more aggressive energy efficiency regulations. Am I

1 correct?

2 MR. BURKE: A. I'm not ruling that out.

3 What I am suggesting is, that should they do so it
4 would be my contention at this point that the net
5 impact on load would not necessarily be to reduce the
6 basic load forecast any more than we already have.

7 That is the general efficiency level may
8 be higher, but also the natural efficiency level could
9 also be higher, effectively. And there could be other
10 changes as we have argued to the basic load forecast
11 which could offset these changes in natural efficiency
12 improvement.

13 Q. So you are saying that if a
14 government 6 or 8 or 10 years from now were to pass
15 new, more aggressive energy efficiency regulations they
16 would not make a difference for this forecast?

17 A. Yes, that is the point.

18 From the point of view of the primary
19 load forecast, that what you are saying it could be
20 more aggressive standards. That could happen, but it
21 would still not necessarily change the primary load
22 forecast.

23 MS. PATTERSON: I thought, Mr. Burke,
24 that you said the basic load forecast before and now
25 you are saying the primary load forecast. Do you mean

1 both?

2 MR. BURKE: No. Well, if I said the
3 basic before, it is the primary that matters in this
4 sense.

5 The natural efficiency improvement that
6 is imbedded in the basic load forecast, we could be
7 effectively understating that through technical change
8 that we have not fully anticipated. And as we said for
9 Panel 1, it is also possible that the effective
10 technological change could be to increase the use of
11 electricity in some applications that we have not fully
12 anticipated.

13 So from the point of view of the basic
14 load forecasts, we have assumed those two forces
15 offset. There are risks on either side and we can't do
16 any better than to assume that they are offsetting on
17 that. And from the point of view purely of efficiency,
18 however, that the effective technology change at the
19 upper end of the spectrum, the cost spectrum, that
20 there will be new technologies coming along that will
21 make the level of efficiency that can be induced higher
22 perhaps, and that that will probably come hand in hand
23 with the evolution of technologies in terms of lower
24 cost that will make the amount of natural efficiency
25 gain higher. And again we have assumed that those

1 balance out over time.

2 Really what it comes to is that this is
3 an area of forecasting technological change and in the
4 absence of being able to specify what those changes
5 will be, we have assumed -- had to make some
6 simplifying assumptions about the symmetry of the way
7 technology advances.

8 MR. KLIPPENSTEIN: I have no further
9 questions, Mr. Chairman. That concludes my
10 cross-examination.

11 [11:16 a.m.] THE CHAIRMAN: Thank you, Mr.
12 Klippenstein.

13 Mr. Mondrow, are you next?

14 MR. MONDROW: Yes, I am, Mr. Chairman.
15 Perhaps it would be appropriate to take a break.

16 THE CHAIRMAN: Why don't we take a break
17 and you can get organized and then we will start in 15
18 minutes.

19 THE REGISTRAR: This hearing will take a
20 15-minute recess.

21 ---Recess at 11:17 a.m.

22 ---On resuming at 11:37 a.m..

23 THE REGISTRAR: Please come to order.
24 The hearing is now in session. Please be seated.

25 THE CHAIRMAN: Mr. Mondrow?

1 MR. MONDROW: Thank you, Mr. Chairman.

2 Good morning, panel. Mr. Shepherd has given me the
3 opportunity to undertake this cross-examination today,
4 but I didn't want to leave him out altogether so he has
5 got some overheads which I prepared and there are
6 additional copies on the table behind my left shoulder
7 here.

8 And I believe that the witnesses and the
9 Board have been provided with a package. Perhaps we
10 could give the first package which has the precis on it
11 a new exhibit number, Mr. Chairman.

12 THE REGISTRAR: That will be No. 311, Mr.
13 Chairman.

14 THE CHAIRMAN: Thank you.

15 ---EXHIBIT NO. 311: Precis Package.

16 MR. MONDROW: And there is a second new
17 exhibit which is a one-page photocopy of a small item
18 from the Globe and Mail this past Saturday day and that
19 would be then Exhibit No. 312.

20 THE REGISTRAR: 312.

21 ---EXHIBIT NO. 312: One-page photocopy of small item
22 from Globe and Mail.

23 MR. MONDROW: In addition to these two
24 items, I have, for convenience, provided the Board with
25 photocopies of the interrogatories that I will be

1 referring to and they can be given their exhibit
2 numbers as they come up. There are copies of this
3 package as well on the table behind my left shoulder.

4 And as well, I provided Ms. Morrison and
5 Ontario Hydro with the numbers for the transcripts and
6 exhibits that I will likely be referring to so that
7 these will be handy.

8 And with me this morning, I have Mr.
9 Steven Diener who is principal of Steven G. Diener and
10 Associates and the research director for IPPSO's
11 intervention team.

12 I don't anticipate being too long today,
13 Mr. Chairman, but IPPSO does consider demand management
14 an important component of Ontario's electricity future
15 forming as it does one half of a demand management
16 non-utility generation package option that, in our
17 view, presents an environmentally and strategically
18 preferable alternative to major new supply.

19 So there are a number of issues that I
20 will be addressing. I will certainly be finished
21 before the afternoon break, if I can manage, and at the
22 afternoon break if not earlier than that.

23 To start off -- I am sorry, I should make
24 one correction. New Exhibit No. 311, if you would
25 please turn to page 2, at the bottom of that page,

1 opposite the line labelled "TCC test", the word "pass"
2 is there and that word should be "fail", just to have
3 that on the record. And I will take that up again in a
4 minute.

5 CROSS-EXAMINATION BY MR. MONDROW:

6 Q. I would like to start with a
7 transcript reference. Mr. Shalaby, I believe this was
8 you and there is no need to turn it up. It was at
9 Volume 1 for the record -- sorry, Volume 51, page 9229.

10 And Mr. Shalaby, you said that Ontario
11 Hydro, of course, doesn't have an infinite amount of
12 resources for demand management or anything else.

13 I assume that that statement indicates
14 that to some extent, resources are a constraint on
15 demand management that you can get, how fast you can
16 get it and how many programs you can put out into the
17 field at any given time; is that correct?

18 MR. SHALABY: A. Yes.

19 Q. Ms. Fraser, energy management has
20 very recently received a \$2.7 billion resource
21 allocation; is that right?

22 MS. FRASER: A. If you mean the movement
23 of three to six, that money has not been allocated.
24 Right now it is a projection of what achieving 5200
25 megawatts of savings will cost. The allocation process

1 takes place in business planning and that process.

2 THE CHAIRMAN: And that is up to the year
3 2000, is it?

4 MS. FRASER: Yes. That is the current
5 estimate.

6 MR. MONDROW: Q. I will refer you to
7 Exhibit 270 which was the exhibit filed by the
8 Coalition.

9 At page 184, there is a photocopy of an
10 article from the Globe and Mail dated August --

11 MR. B. CAMPBELL: Just a minute, Exhibit
12 270?

13 MR. MONDROW: That's right, page no. 184.

14 MR. B. CAMPBELL: I am not sure the panel
15 has this at the moment.

16 MR. MONDROW: Perhaps, I am not sure
17 there is a need --

18 THE CHAIRMAN: If you are referring to an
19 article in the Globe and Mail, perhaps you can just
20 refer to the pertinent parts of it.

21 MR. MONDROW: Yes. I am not sure there
22 is a need to turn it up, Mr. Chairman. I will just
23 read the line that I am thinking of. The author says
24 that:

25 "Hydro has increased its budget for

1 conservation spending between now and the
2 year 2000 to 6 billion from 3.3 billion."

3 This article also talks about a
4 conversation with Mr. Eliesen, Ontario Hydro's Chair.

5 So I assume that this additional money
6 has perhaps not been allocated to specific programs,
7 but the Energy Management Branch knows that the money
8 is going to be there; is that right, Ms. Fraser. You
9 are expecting this additional money?

10 MS. FRASER: A. That's correct. That
11 was -- our scenarios were predicated on the fact that
12 we had the resources to do the jobs that we have put in
13 those scenarios.

14 Q. All right. Thank you.

15 And Mr. Wilson, earlier on this panel you
16 told us that of the \$240 million redirected from
17 nuclear pre-engineering, there have now been \$220
18 million allocated to programs or channelled through to
19 their eventual end uses which would leave about \$20
20 million as yet unaccounted for; is this true?

21 MR. WILSON: A. I don't recall
22 mentioning \$220 million, but the number should be
23 approaching \$200 million at this point, yes.

24 Q. So there is some money left over from
25 that reallocation that hasn't yet been specifically

1 targeted for demand management?

2 A. Yes.

3 Q. Thank you. This would suggest to me
4 that resource allocation is not right now a constraint
5 on demand management activities. There is money to do
6 the next items on your roster; is this true?

7 A. Yes, there is.

8 Q. Thank you.

9 A. I guess the question is: Is there
10 any constraint? I think there is a constraint, but the
11 constraint is partly external and partly internal.
12 Certainly, the external constraint is how fast can you
13 move and how fast can other people move to put products
14 together and put their side of the program delivery in
15 place.

16 Those are real constraints in program
17 constraints and we have explained that at some length.
18 And the internal constraints are assembling program and
19 business plan cases that are sufficiently convincing to
20 our senior management and to the Board of Directors
21 that the money will be well spent.

22 Q. Yes, I understand.

23 A. So within the general permission to
24 proceed at full speed, there are real constraints and
25 we struggle with them when we are not here.

1 Q. I appreciate that. Money right now
2 isn't a constraint for demand management; is that
3 right?

4 A. I would think that is probably true.

5 Q. Thank you. I would like to talk
6 about the model of technological change, technological
7 evolution that Ontario Hydro assumes for
8 energy-efficient technologies.

9 I think, Mr. Burke, you most clearly
10 explained the framework starting at transcript Volume
11 52, page 9481. Again, if you would like, you can turn
12 it up. I won't be quoting from that directly. I put
13 that on the record for reference.

14 But if you would please turn up new
15 Exhibit No. 311 and turn to page 1 of that new exhibit,
16 and we have the overhead. I have produced a schematic
17 here which I hope is representative of the basics of
18 the model and I will talk about what I have meant to
19 represent by this more in a minute.

20 From reading that transcript reference
21 that I referred to, Mr. Burke, Hydro's forecast, if I
22 understand it, of energy-efficient improvements is
23 meant to be a snapshot of a dynamic evolution of
24 technology. You referred to the word "snapshot" a
25 couple of times in the last few weeks.

1 MR. BURKE: A. Yes. The estimate of the
2 megawatt impact of efficiency improvements is estimated
3 using a snapshot based on current technology for
4 electrical efficiency improvement.

5 Q. Thank you. Movement in the schematic
6 that I have here is from top to bottom as you can see
7 and there are three things happening as we move from
8 top to bottom on this page.

1 penetration rate and their price will fall.

2 Q. Yes. Thank you.

3 A third movement on the page is the
4 evolution of the technology itself. And I have
5 represented two categories of technology here by two
6 boxes. The first is labelled "induced EEI" and is
7 meant to house technologies that must be program driven
8 to ensure implementation, not a new concept for this
9 panel. And the second is labelled "natural EEI" and
10 houses technologies that are naturally implemented
11 without the necessity of incentives or other
12 inducements.

13 And if I understand Ontario Hydro's
14 model, any snapshot will reveal a number of
15 technologies in each box and these technologies in
16 aggregate would represent a total potential EEI
17 captured in the forecast for that particular point in
18 time.

19 But underlying the snapshot is a
20 movement, an evolution, which is driven primarily by
21 price. So I have shown new technologies appearing
22 towards the top of the page and as time runs, price
23 comes down as we have just talked about. That is
24 generally correct. And technologies drop into the
25 induced box and then as time runs, prices come down

1 further.

2 If all goes well in the market and
3 technologies drop down again into the natural box,
4 would you agree that this is generally an accurate
5 representation of the model that you talked about, Mr.
6 Burke?

7 A. Yes. The only comment I would make
8 is that the new technologies you are talking about are
9 electrical efficiency improvement technologies and
10 clearly perhaps one of the elements that I have
11 confused people with is clearly there are technologies
12 that also do things other than improve efficiency.
13 They may cause people to switch to electricity or
14 increase the intensity with which they use electricity.

15 So, understanding that when you say new
16 technologies at the top, you are not restricting
17 yourself. You have to restrict yourself in this
18 diagram purely to the efficiency improvement ones and
19 that there is technological evolution in areas which
20 are not strictly efficiency improvement.

21 Q. But for the purposes of Ontario
22 Hydro's model and its assumption about the evolution of
23 efficient technologies, this accurately characterizes
24 that?

25 A. Yes.

1 Q. Thank you.

2 Now, it seems to me that Ontario Hydro's
3 model as related by you, Mr. Burke, assumes two things:
4 First of all, that while it isn't clear what particular
5 technologies will appear in the induced box in any
6 given snapshot, the megawatts of savings represented by
7 the box can be estimated with some of confidence. You
8 spoke about that this morning.

9 Is that a fair characterization?

10 A. Well, the only reason that they can
11 be estimated with some confidence is that if we take
12 the snapshot today, we have a fairly good sense of what
13 the members of each of the two boxes is, especially
14 with the approach we take; that is, to have a
15 requirement that we know what the cost and performance
16 of technologies are that are included in the induced
17 box.

18 So, it is readily estimated as long as we
19 make the assumption that, in fact, the snapshot that we
20 take today is, in fact, a good estimate of future
21 relationships between those two boxes which is an
22 assumption.

23 Q. But based on the technologies that
24 you have identified in the box today, you take a
25 snapshot today and you project out into the future a

1 . forecast of the demand management potential.

2 And so with reasonable confidence in your
3 opinion, at any time in the future within your forecast
4 range, you are able to tell us how much potential will
5 be around at that time?

6 A. Yes, but I am not projecting the
7 technology then, I am projecting the market to which
8 that efficiency improvement applies.

9 The difference in the technologies in the
10 induced box and the natural box, to use your diagram,
11 give me the efficiency gain that I should apply to the
12 eligible market segments. And those evolve over time
13 and they are forecasted in the basic load forecast.

14 But the per cent improvement in the year
15 2000, which is the focus of our potential analysis for
16 the most part, the snapshot is taken now and that
17 number, the efficiency gain, potentially doesn't change
18 over time.

19 Q. And the market at any point in the
20 future is obviously influenced by the technologies
21 available in the future. You say that you project what
22 the market will be.

23 A. Yes.

24 Q. You, in fact, project what the
25 potential energy efficiency improvement is in any given

1 year and that is certainly, to a very great extent,
2 depends on the energy-efficient technologies that will
3 be available in that year; is that true?

4 [11:50 a.m.] A. Yes. But I think it is quite clear
5 that I am not projecting what I think the spectrum of
6 technologies available in the year 2000 will be, what
7 their cost and performance will be, because I cannot
8 know that. I only know what they are today.

9 Q. Yes, I understand that. In fact, you
10 made it quite clear that the mix of technologies in the
11 box at any time in the future is not something that we
12 should be trying to pin down with any great accuracy
13 right now, it's very difficult to do.

14 A. That's correct. It's the megawatt
15 difference between the two that's important.

16 Q. Thank you.

17 The second point that I wanted to ask you
18 about, and I think the model also incorporates this
19 point, is that as time runs technologies drop down
20 through this framework and they collect in the natural
21 box and the growth in the number of megawatts contained
22 in the natural box is captured by Hydro's basic load
23 forecast; is that right?

24 A. Yes.

25 Q. And this morning with Mr.

1 Klippenstein you were talking about this very
2 evolution, and Hydro's model assumes that the boxes
3 evolve -- or it's not the boxes evolving, the megawatts
4 of saving, the evolution of the technology in the
5 market keeps pace, the evolution in the induced
6 category keeps pace with the evolution in the natural
7 category, so that there is not a big disorientation
8 between the two as we trace our development outwards in
9 time; is that what you said?

10 A. Implicit in what I am doing, the way
11 the current methodology works is they go in parallel.

12 Q. Thank you.

13 These assumptions, it seems to me, are
14 really based on the premise that efficient technology,
15 and so the market for efficient technology, will evolve
16 at the same rate that it has historically; do you think
17 this is correct?

18 A. I don't think it is a question of
19 what the historical rate is; simply that technology
20 does evolve. If I had a lot of good information about
21 the rate at which technology had evolved historically
22 at low cost and at high cost, to know more precisely
23 which part of this diagram moves faster, I would use
24 it. But because that information doesn't exist, I am
25 obliged to assume that the technical change effectively

1 occurs in a parallel fashion, as I just described,
2 equally at the top end and the bottom end of the
3 market.

4 Q. By the same token, you can project
5 for any point in the future of your forecast with some
6 degree of confidence what the potential EEI would be at
7 that point. So you are assuming a regular evolution of
8 the technologies in the market that traces them into
9 the future?

10 A. I am making that assumption, yes.

11 Q. Given the newness of the efficiency
12 culture and market in Ontario, and industry in fact in
13 Ontario, do you think that simple extrapolation of a
14 regular pattern accurately reflects with confidence
15 what is going to happen with efficiency in the near and
16 in the median future?

17 A. I think the major element that is
18 different in -- or could potentially be different in
19 the next 10 or 20 years from the past is the extent to
20 which electrical utilities and other government
21 agencies in North America and elsewhere have an effect
22 on the evolution of technology in the marketplace. To
23 the extent that technologies actually get demonstrated
24 faster and sooner, it might mean that the rate at which
25 efficiency improvement occurs is faster than in the

1 past.

2 The difficult question is whether having
3 more candidates perhaps for the induced box than
4 before, that is because companies realize that
5 technologies that would not pass normal market tests
6 would be promoted by utilities through their programs,
7 whether that will actually lead to a situation where
8 again the basic assumption is invalidated, and that is
9 that the induced EEI box actually evolves faster than
10 the natural EEI. I still don't know that.

11 That EEI in general may proceed at a
12 faster pace than in the past through the activities or
13 the increased activities of utilities in the
14 marketplace. That I would accept as a possibility and
15 could have an impact. But whether it will actually
16 change the relationship between what is induced and
17 natural, that I still can't tell.

18 MS. FRASER: A. What you may get is
19 different ways or different technologies which will
20 achieve the same savings so we have a broader choice of
21 technologies. For example, in exit signs it used to be
22 that you would go from an incandescent lamp to compact
23 fluorescent for a typical exit sign application.

24 There are no exit signs in this room at
25 all. I guess there is no way out.

1 MR. B. CAMPBELL: Not for you.

2 (Laughter)

3 MS. FRASER: Oh, Oh.

4 Anyway, there are now a number of
5 different exit sign technologies, LED's, miniature
6 incandescents and whatnot, which are below 5 watts per
7 exit sign as opposed to what was before below 40 or 50.
8 So what we have is a broader choice. There has been an
9 improvement in the energy efficiency overall but it's a
10 broader choice, which I think will help improve
11 penetration overall but it may not change the
12 difference in the potential.

13 MR. MONDROW: Q. But you would agree
14 with Mr. Burke that it is conceivable that as the
15 culture changed that we would all like to see, as Mr.
16 Wilson has testified to, takes hold, hopefully, in
17 Ontario, we could get patterns of change in evolution
18 and increases that we can't anticipate?

19 MS. FRASER: A. Yes, I was agreeing with
20 that. It would probably get wider as well as deeper.

21 Q. Thank you. I would like to move to a
22 slightly different topic, although it still relates to
23 the model generally, and that's avoided cost.

24 As late as this morning, Mr. Shalaby, you
25 told us that there weren't too many cliff hanger

1 technologies out there, and it has been this Panel's
2 evidence all along that very little has been ruled out
3 because it's uneconomic when set up against the total
4 customer cost test. This this is a fair paraphrase, I
5 hope, of your evidence.

6 MR. BURKE: A. Yes.

7 Q. Thank you.

8 And, of course, this means that the same
9 is true for the foreseeable future, the future that you
10 forecast. If the avoided cost took a jump three years
11 from now, or five years from now, or at the end of this
12 hearing, for example, that wouldn't change the forecast
13 of your demand management potential, your EEI potential
14 and your penetration rates and so on, because it
15 wouldn't capture that many more new technologies; is
16 that Ontario Hydro's position?

17 A. Yes. I think it is fair to say that
18 we have admitted that we do not have knowledge of too
19 many technologies whose costs exceed significantly the
20 costs, our avoided cost, and that is probably because
21 the market has not been interested in even exploring
22 things that are that expensive.

23 So, I wouldn't want to blankly rule out
24 some incredible changes in avoided cost wouldn't change
25 potential. But in the range, in the region that we

1 have been dealing with, I think it is a fair statement.

2 Q. I guess this is my problem with that
3 premise. If we take a look at the model again, what
4 that would mean, if you accept that premise, is that
5 technologies that appear on the market would either pop
6 in to this picture within the induced box, the top of
7 which is defined by Hydro's avoided cost, or somewhere
8 off the spectrum, they wouldn't even appear on this
9 page. And it just seems to me that as markets and
10 technologies and science evolves we would get new
11 technologies appearing at a whole spectrum of price
12 ranges which could be anywhere on this line; some would
13 be off the page, some would be right in Hydro's avoided
14 cost barrier, and there would likely be a whole bunch
15 in between. Is that not a more intuitive depiction of
16 the evolution and the development of technology?

17 A. I think some things can appear in the
18 labs as possibilities, but if their costs are well
19 outside the range where someone could hope to ever
20 commercialize the product, they wouldn't be developed
21 further.

22 So, you're right, I am sure there are all
23 kinds of technologies that people have thought about,
24 and maybe even a prototype somewhere for that are
25 extremely expensive, and just -- there is no

1 possibility that they could be brought within a
2 reasonable range of cost. The reasonable range has
3 typically been what the market has been prepared to
4 pay, and there are jurisdictions in the world that pay
5 much more for electricity than we do, and so there are
6 some markets that way. And increasingly there are
7 markets where people do just purchase energy efficient
8 products because they wish to purchase energy efficient
9 products, independent of economics. And then there is
10 the third market which is the utility sponsored or
11 utility program area which looks at technologies
12 against avoided cost.

13 But on a life-cycle basis, I would think
14 these technologies would still have to come in that
15 range to be pursued, and I think that's why there is a
16 dearth of these very expensive technologies that anybody
17 knows much about, because while they may be technically
18 possible, in fact the economics are so bad that we
19 never hear about them.

20 Q. In fact, what I thinking about are
21 not the very expensive technologies but the
22 technologies that fall somewhere under very expensive
23 but somewhat over Ontario Hydro's avoided cost. And
24 given the future involvement of government and
25 utilities in trying to harvest energy efficiency, it

1 would seem to me that companies would try to develop as
2 many products as they could, and it is likely that many
3 of these products would fall somewhere close to the
4 avoided cost but above it on the spectrum. Is this not
5 a fair guess, Mr. Burke?

6 A. Well, I would be speculating. I
7 think that companies don't go out to find technologies
8 at a certain cost. Technologies emerge and then they
9 are costed out.

10 I can just observe that across North
11 America in the supply curves of conserved energy that
12 are produced, there are very few examples of high cost
13 technologies.

14 Q. By high cost you mean more than
15 avoided cost?

16 A. Costs that exceed our avoided cost.

17 Q. Mr. Wilson, at Volume 50 of the
18 transcript, and maybe I will tell you the point I am
19 getting at and you can turn it up if you want to. It
20 was at page 9041, you said that if money were no object
21 there would be a lot more demand management.

22 Could you reconcile this statement with
23 what Mr. Burke and I have just been talking about?
24 It's Volume 50, page 9041. It's around line 22.

25 MR. WILSON: A. I was just doing a

1 little background reading here.

2 Mr. Poch was asking me questions, I
3 think, of a hypothetical nature, dealing with applying
4 weights to environmental consequences and whether that
5 would make any difference in the assessment of what was
6 economic. I am not sure if that's entirely correct,
7 but why don't you go ahead with your question.

12 That's not what you were saying at this
13 page in the transcript?

23 Q. Fair enough.

24 [12:08 p.m.] Ms. Fraser at Volume 52 of the
25 transcript, page 9403, you talked again with Mr. David

1 Poch and you talked about technologies that were cost
2 effective before -- not cost effective.

3 MS. FRASER: A. Sorry?

4 Q. It is Volume 52, page 9403. It is
5 about line 25. And you were talking about technologies
6 that were not cost effective before but for which 80
7 per cent of incremental cost incentives might help to
8 capture some savings now.

9 And I believe it is the top of the next
10 page, Mr. Poch referred to technologies on the margin.
11 What did you take this reference to "technologies on
12 the margin" to mean?

13 A. This was dealing with the
14 unidentified part which was included in the 1989
15 Demand/Supply Plan and which has since disappeared.
16 And we had assumed an incentive rate for 50 per cent
17 for all those technologies which were identified and an
18 80 per cent incentive for technologies which were
19 unidentified.

20 And so it was those opportunities at the
21 margin, those unidentified ones, would have a higher
22 incentive level that we expected that they would
23 probably be more costly and because they were newer
24 would require a higher incentive to get the penetration
25 that we would want to get out of them.

1 Q. If we go back to page 9403 at the
2 bottom, the last line there, starting at the second
3 last line actually, you said:

4 "They are things that were not cost
5 effective before."

6 And then when we flip over the page, you
7 talk about bringing them down closer, on page 9404.

8 I read that as saying that there were
9 technologies that weren't cost effective and now are
10 cost effective; is that not an accurate reading?

11 A. Oh, that has to do with the evolution
12 that you have just described here--

13 Q. Right.

14 A. --in terms of things moving from your
15 new technologies into something that we could then
16 induce, which is assumed to happen in our assumptions,
17 as I understand what Mr. Burke has said.

18 Q. I see. Let me ask you another
19 question, Ms. Fraser, and Ms. Mitchell actually agreed
20 with Mr. Poch and I will just give you the reference
21 for the record. It was at Volume 53, page 9622, around
22 line 21, that Tungsten-Halogen lamps are a technology
23 determined not to be cost effective but under higher
24 avoided cost levels might be.

25 And later that same morning, as a matter

1 of fact, you updated us, that aversion of the
2 Tungsten-Halogen technology, the initials PAR, the PAR
3 lamp will henceforth be included in your energy
4 efficient lighting program.

5 I am not really clear about all the
6 various technologies.

7 Is this PAR lamp the same technology that
8 Ms. Mitchell was under the impression was not cost
9 effective?

10 A. That is the exact point that we are
11 dealing with here, in terms of different applications
12 can make things cost effective or not.

13 In the residential market where you are
14 looking at replacing lights that might be on two or
15 three hours at a time, a technology at cost 'X' may not
16 be cost effective.

17 If you are using that technology to
18 replace - in this case it would probably replace an
19 incandescent pot light or either a flood or a spot - in
20 retail stores which are operating 12, maybe 14 hours a
21 day, the whole avoided cost scenario looks different
22 for that same technology. It is not the fact that the
23 technology costs change. The avoided costs are
24 different because the load profile of the application
25 is different. And I think that is also something that,

1 you know, is reflected in our estimates of potential.
2 It gets back to the T8 lights and religious buildings
3 again.

4 Q. So when Ms. Mitchell referred to a
5 study that was done on bulbs and the study determined--

6 A. For residential.

7 Q. --that the bulbs weren't cost
8 effective, it was not a change in the technology price;
9 it was a change in the use pattern of the bulbs. Am I
10 understanding you?

11 MR. MacLELLAN: There was a change in the
12 use pattern, plus a change in what it was replacing.
13 The Halogen bulbs that she was talking about originally
14 were designed to replace a standard A-line normal
15 incandescent light that you have in every table lamp in
16 your house likely.

17 So you are talking about a fairly high
18 priced technology replacing a 60, 70 cent light bulb;
19 whereas the PAR lamp is a flood or spotlight. So very
20 different applications and you are also using that
21 Halogen product to replace an incandescent PAR which
22 costs from \$6.00 or \$7.00 as opposed to 60 or 70 cents.
23 So, it is a case of the application and it is a case of
24 what it is replacing in terms of economics.

25 Q. It would seem to me that with light

1 bulbs, as an example, energy-efficient light bulbs,
2 there is a spectrum of uses, different applications and
3 whether you put one in the hall closet or in the
4 kitchen and a whole bunch of rooms in between with
5 various levels of daily use. And cost effectiveness,
6 of course, is affected by the frequency with which
7 these bulbs in this example are used.

8 Would that not suggest that there is a
9 spectrum of avoided costs for these technologies and,
10 in fact, your programs capture some of them in some
11 applications but a change upwards in avoided cost would
12 very likely --

13 MS. FRASER: A. Are you suggesting that
14 we ask people to turn their closet lights on for 24
15 hours a day so that they would then be cost effective
16 for us to replace them?

17 Q. Not at all. What I am suggesting is
18 that if your avoided costs went up, perhaps a few more
19 applications in the light bulb example would be
20 captured under the test; would you agree with that?

21 A. Could be, sure.

22 MR. MacLELLAN: A. Yes.

23 Q. Thank you.

24 MR. SHALABY: A. I hate to spoil all of
25 this, but avoided cost can also go up; it can also go

1 down. Certainly, it is not a unitary direction for
2 avoided costs. They can go up or down. and if they go
3 down, then many opportunities that we screen to be
4 economic may, in fact, turn out to be uneconomic at a
5 future date.

6 Q. Certainly. I take your point. Thank
7 you.

8 I guess I have one more question on the
9 general theme of the model. For the Demand/Supply
10 Plan, Hydro, as Ms. Fraser, you have mentioned, took a
11 stab at estimating - and, I believe, the words were
12 something like - 'imminent impacts of emerging
13 technologies and new ideas for enhancing penetration'.
14 This is the unidentified EEI category and it is talked
15 about and defined in Exhibit 3 at page 710.

16 But by the time of the 1990 demand
17 management forecast, we had an increase in EEI
18 potential by the year 2000 of 1470 megawatts and the
19 unidentified category has been spent. Indeed, Mr.
20 Wilson, you have told us that all energy efficient
21 technology is now identified; is that true.

22 MR. WILSON: A. I think that is true,
23 except for industrial. And this was subsequently
24 explained in the industrial sector there. We have made
25 provision for increases of potential and attainable

1 that we don't have specific details for, but it is near
2 a process efficiency.

3 Q. Yes. In fact, I will have a question
4 on that in just a minute.

5 Is it Ontario Hydro's position then that
6 the fortuitous addition of several technologies to the
7 roster between 1988 and 1990 which accounted for the
8 increase in EEI potential was a one-time windfall and
9 that, as you have said, the unidentified category is
10 now empty and there are no other unforeseen
11 technological advances that will enter the market in
12 the avoided cost ballpark and change the forecasts
13 again upwards?

14 MR. BURKE: A. I guess the answer is
15 that there may be new technologies enter, but when we
16 completely redo the basic load forecast and consider
17 what is natural, that we expect to find over time that
18 there will be increased efficiency gains in the natural
19 as well and that the net effect may -- well, it is our
20 assumption, will be roughly the same as before.

21 Right now we have added to the potential
22 and we may expect that we may add it, I guess at some
23 points in future, but I would also expect that we will
24 observe changes in the assumptions about natural EEI
25 over time and that these should balance out.

1 Q. By balance out then, you mean that
2 the pace of the two boxes that I identified earlier
3 would stay -- the pace would be relatively the same?

4 A. I expect so. I think most of the
5 changes that we made between 1988 and 1990 were things
6 that we were aware of and we were watching, but we
7 hadn't enough information at the time to feel
8 comfortable with going with those options.

9 The retrofit housing example was a clear
10 case of much more additional information. I am not
11 suggesting we won't get new information in the future,
12 but I think some of the major chunks of potential have
13 been essentially much better handled in the 1990 case
14 than we could in 1988.

15 And it is not that the difference is a
16 pure function at all of the evolution of technology.
17 It is more a function of better information about
18 technology and its application in Ontario. So that I
19 would expect that we will not have big changes like
20 occurred between 1988 and 1990 again. I could eat my
21 words, but that is my expectation at this point.

22 Q. After Exhibit 76, we were given a new
23 exhibit that incorporated fuel switching and standards
24 which, of course, wasn't foreseen, at least explicitly
25 in Exhibit 76 and we have another big chunk now added

1 to the demand management forecasts.

2 This then, too, is probably a one-time
3 thing; is that your position, Mr. Burke?

4 A. Well, the fuel switching example, I
5 think we have indicated in the document 257 and 258
6 that there are options in that general category of
7 demand reduction, electricity demand reduction, that we
8 have not pursued at this point. We have been specific
9 in that we have restricted ourselves to gas available
10 areas and certain things we have not included.

11 So, I would say that, depending on the
12 circumstances and the direction of government policy
13 and so on, I wouldn't claim that these numbers are at
14 all the last word. They are preliminary.

15 Q. I guess the point I am making is that
16 we have seen a couple of changes even in the recent
17 past and it is not inconceivable that we will see
18 leaps, maybe even quantum leaps, coming from directions
19 that we can't expect you now to capture; is this fair?

20 A. There is a risk of that, yes.

21 Q. And we are certainly all pushing for
22 a cultural change in Ontario. And, in fact, it seems
23 that much of the world, certainly much of North
24 America, is very interested in green ideas in
25 efficiency and conservation. This is something that is

1 unprecedented, wouldn't you agree?

2 A. Yes, but I would remind you of
3 discussions we have had in Panel 1 and I guess earlier
4 in this panel that suggests the direction of the
5 greening of the world do not necessarily unambiguously
6 mean a purely efficiency gain in electricity, that
7 there may be applications of electricity that are more
8 environmentally benign than the current fossil fuel
9 application.

10 And I found it quite interesting that the
11 Ministry of Energy would recognize this in the
12 industrial sector and in particular in their high
13 conservation scenario that they proposed in Exhibit
14 249, where effectively almost all the efficiency gains
15 in the industrial sector were offset by increased use
16 of electricity for environmental reasons.

17 And we have essentially suggested that it
18 is far from clear where the impacts of environmental
19 policies will net out on electricity demand at this
20 point in time. So, that we are focusing on the
21 efficiency side of things and that is why I wanted to
22 be quite clear with your diagram that there was
23 efficient technologies in electricity use.

24 There is a whole realm of technological
25 change which may move to increase the use of

1 electricity. One was brought up recently by AMPCO, the
2 electric vehicle, which has also the potential to be
3 seen as environmentally benign and would increase load
4 and would be efficient at a certain level.

5 Q. Ontario Hydro is not actively
6 marketing any of these electro-technologies. That is
7 your evidence, isn't it?

8 A. Yes.

9 Q. And it seems to me that there are at
10 least two major ways to help the environment: One is
11 to switch off of fossil fuel, for example, and at least
12 from the end user's perspective, use electricity if it
13 is more efficient technology. And the other is, at the
14 same time or perhaps an alternative to that, cutting
15 down the amount of electricity consumed in any given
16 process; that is, you can either take up more efficient
17 electro-technology or you can use more efficiently the
18 electric technology that you have or hopefully do both;
19 is that right?

20 MR. WILSON: A. I think if you are
21 concerned about environmental effects on the natural
22 environment, you would try to use electricity more
23 efficiently. You use other fuels for -- they are more
24 benign from an environmental point of view and switch
25 to electricity where that is more environmentally

1 benign.

2 So this is a very tangled issue and there
3 is no simple answer to which direction does that push
4 electricity use.

5 Q. I would certainly agree with that.

6 Thank you.

7 Ms. Fraser, Exhibit 260 I would like to
8 refer to at page 38. I might have you flipping a bit.
9 We were told there -- and perhaps I will just read the
10 quote. I don't think it will be contentious:

11 "Increases in potential induced
12 EEI for the industrial sector from the
13 1988 forecast to the 1990 forecast are in
14 part due to technologies not yet
15 specified."

16 And we are referred to Exhibit 276. And
17 at page 52 of Exhibit 76, and perhaps I will just read
18 this for you. It might save you some shuffling time.
19 In the last sentence on that page, we are told that of
20 the 900 megawatts estimated EEI potential by 2000 in
21 the industrial sector, 380 megawatts are to come from
22 "other technologies and processes whose load impacts
23 have not yet been quantified".

24 My question is pretty simple, I think:
25 How do you know that you are going to get 380 megawatts

1 from measures whose load impacts have not been
2 quantified?

3 MR. BURKE: A. I guess, because it is in
4 the realm of the potential, I will venture forth. We
5 have based this estimate on the judgment of a group of
6 experts in-house and I think Ms. Fraser has given
7 examples of technologies that could well make up that
8 380 megawatts previously in this --

9 MS. FRASER: A. Correct. I believe I
10 identified 360 of those megawatts have now --
11 subsequent to the preparation of Exhibit 76, 360 of
12 those have been specified per se.

13 Q. So, we still -- oh, I am sorry.

14 MR. BURKE: A. It is quite clear and we
15 have stated it up front in our direct evidence and
16 subsequently, that further study needs to be done in
17 the area of the industrial potential, especially as it
18 becomes much more process specific, because there is
19 room to certainly -- there are areas that we do not
20 have knowledge of. And when that information becomes
21 available, we will probably end up increasing the
22 potential in the industrial sector.

23 Q. I would like to ask you one question
24 about new Exhibit 312. I realize that I didn't have it
25 to you until this morning. This is a little item I saw

1 in the Globe this past Saturday. And it appears that
2 EPRI has developed a microwave clothes dryer that it
3 hopes will reduce both electricity costs and drying
4 time.

5 Has Ontario Hydro done any investigation
6 of the impacts of this particular technology?

7 MR. MacLELLAN: A. We have looked at the
8 technology. Apparently, the jury is still out on
9 whether or not it is going to be a commercially
10 available product soon or ever.

11 There is some doubt by some microwave
12 experts that it will, in fact, perform, but we are
13 keeping an eye on it, I guess is the answer.

14 [12:30 p.m.] Q. So I guess that means that where it
15 to develop to a stage where it would hit the market,
16 you wouldn't have any idea now what kind of price range
17 it would fall in?

18 A. It seems to be somewhere between 10
19 and 20 per cent more. That's a projection made from a
20 prototype assuming certain quantities in the
21 marketplace. It's not a huge increase over the current
22 product.

23 Q. Could you tell me how this would
24 relate to avoided cost for that particular technology?
25 Would it pass?

1 A. We haven't looked at that.

2 Q. Okay. Thank you.

3 I will just pause here for a second, Mr.

4 Chairman, and everyone else. I should let you know
5 that Mr. Diener will have to unfortunately leave a bit
6 before the lunch break, so when he gets up to leave
7 that's what is happening.

8 Having said that, I would like to move on
9 to another area, please.

10 As this morning, although along a
11 different line, I would like to look at a few examples
12 of total customer cost test and how that works, my
13 understanding of that test. The way I understand the
14 total customer cost test, and I will be very brief, I
15 know you have gone over this several times, is that you
16 take the incremental equipment costs for the efficiency
17 and you add Ontario Hydro's program costs and you
18 subtract the changes in customers' operating costs,
19 such as reduced maintenance. I think we spoke about
20 that this morning. You get a sum and you set that up
21 opposite avoided cost, and if that sum is less than
22 avoided cost, it passes the economic test, and if it's
23 greater than avoided cost it doesn't pass. And if it
24 does pass the test, the energy management branch has
25 the mandate to go out and get, pay up to full avoided

1 cost to get that energy efficiency in place. Am I
2 right?

3 MR. SHALABY: A. The first part about
4 describing the test is fine. The mandate, maybe I will
5 leave it to the energy management people.

6 MS. FRASER: A. In terms of something
7 that is economic in terms of technology, right, but
8 those are technologies that were -- after.

9 In terms of what we pay, our mandate is
10 governed by the strategic principles that are in the
11 Demand/Supply Plan, although there are situations, and
12 I have discussed those in detail, where we deviate from
13 those in different specifics. Although in terms of
14 putting the overall general plan together, it's not a
15 general rule that we always pay full avoided cost. I
16 mean there is lots of times that would just be silly.

17 Q. I understand that completely from
18 your evidence. If fact, when you can pay less than
19 full avoided cost -- the less you can pay and still get
20 the measure, obviously the better for everybody. But
21 the mandate is there nonetheless and I realize that
22 there are a lot of strategic principles that you still
23 apply in various cases and various ways. But is it a
24 fair generalization, distillation, I will put it, to
25 say that if you have to pay up to full avoided cost to

1 get an economic measure, you will do that? That's been
2 your evidence, hasn't it?

3 A. What you are talking now is the
4 utility cost test, and at this point we don't have any
5 specific guidelines whether or not that has to be
6 positive or negative. But we do look at it, when we
7 use that test to compare alternatives within programs.
8 I don't know if we could quite characterize it the way
9 you have asked me to.

10 I use the utility cost as a mechanism to
11 look at the perspective from Ontario Hydro on different
12 program alternatives when you are looking at a
13 particular program area. So, there is different ways
14 to get it and obviously you are going to want to
15 maximize the the benefit to the utility, all things
16 being equal. So if you are going to get the same
17 megawatts and one test was positive and one test was
18 negative, you would take the one that was positive.

19 Q. I understand, and there were a number
20 of tests that you spoke about in your direct. But my
21 understanding of the evidence was that these other
22 tests, including the utility cost tests, are applied to
23 program design and they assist you in harvesting the
24 demand management in the best, most cost-effective way.

25 But my understanding of the evidence is

1 that if you have to pay full avoided cost, if that's
2 the only way you are going to get it, that's the
3 ultimate test of whether you are going to go out and
4 get that option; isn't that true?

5 A. If we are down to that determination,
6 yes. I think the example I gave of that was a specific
7 thermal cool storage program.

8 Q. Yes, I remember. Thank you.

9 If you could bear with me for just a few
10 minutes, I hope we can do this fairly quickly. I would
11 like to go through a couple of examples, and just try
12 to get out a few points here. If you look at page 2 of
13 new Exhibit 311, and I have mentioned the correction to
14 this page. I am hoping that these figures will guide
15 us quickly through a hypothetical.

16 Assume that a university comes to you,
17 Ms. Fraser, and maybe we could use your savings by
18 design program, or some permutation of that, the
19 understanding that I am trying to get at is that the
20 customer comes to you with a package of proposed
21 options, it's either for new construction or as part of
22 a retrofit project, and if the package meets the total
23 customer cost test, it becomes economic, and then
24 subject to the other tests that you apply to figure out
25 the best way you can harvest this demand management,

1 you procure that option or that package of options; is
2 that right?

3 A. Not quite. The program is already
4 designed and we have applied these other tests on a
5 program basis, making certain assumptions about what
6 the packages that we are going to see are. What we do
7 at the point at which we actually have a project that
8 comes to us or we go out and get is then do a test at
9 that project level as well to make sure it passes the
10 TCCT. The incentive level and whatnot has already been
11 determined by the program design in advance of that.

12 Q. I am thinking of a scenario where a
13 customer comes to you with an option, we can even
14 simplify it and say one option, and that's the
15 hypothetical I would like to pursue here, if we could
16 go on that basis. I'm sorry if I have muddied the
17 waters by referring to the specific program, but there
18 are a lot of programs as you well know.

19 A. Sure.

20 Q. So the hypothetical I am getting at
21 is the customer comes to you with an option. The
22 university in our case comes to you and has identified
23 a measure or some interrelated measures, and they have
24 determined that their incremental cost is \$1,100,000,
25 as listed at the top of the page here, and they also

1 figured on a net present value basis they are going to
2 save \$800,000, and the project -- let's assume that the
3 option life here is three years -- the net present
4 value of those savings would be \$800,000 to the
5 university.

6 A. What is included in those savings?

7 Q. Electricity bills basically, the
8 reduction of electricity bills.

9 A. Anything other than that in terms of
10 savings would be included in or netted from the
11 incremental costs.

12 Q. I understand, and that's actually the
13 correction that Mr. Shalaby made to Exhibit 3 earlier
14 in this panel?

15 A. Correct. So the net present value of
16 the savings is the energy savings.

17 Q. That's right. We can assume that is
18 all it is for the purposes of my questions.

19 And the University feels that it wants
20 to do something good for the environment and set an
21 example which is good from everyone's perspective, and
22 so they say, if you just make us whole, if you just pay
23 us the difference between our cost and our bill
24 savings, \$300,000, we will go ahead and implement this
25 package and maybe we can get our students to do some

1 studies and things like that.

2 So, you take that option and you run it
3 through your avoided cost program, and the avoided cost
4 drops out the bottom at a million dollars. And what
5 this says to me, your total customer cost test says to
6 me that in this particular case we fail the total
7 customer cost test, and the matter ends there, that
8 option isn't pursued, at least from Hydro's
9 perspective; is that correct?

10 A. That's correct. Basically you just
11 take the incremental cost and you are ignoring program
12 costs here but that would only make the right-hand side
13 of the equation higher. Avoided cost, if it's less
14 than -- more than avoided cost it doesn't pass.

15 Q. I am purposefully being simple here.
16 There are a couple of concepts that I am trying to get
17 at. I will take you quickly through another one on
18 page 3 of that same exhibit.

19 THE CHAIRMAN: Actually, they might make
20 it with the 10 per cent override in this particular
21 case.

22 MS. FRASER: That's right. It would be
23 right on.

24 MR. MONDROW: I am sorry, Mr. Chairman,
25 by the 10 per cent I understand you to mean the

1 preference premium?

2 THE CHAIRMAN: Yes.

3 MR. MONDROW: Q. I am assuming that
4 that's in the avoided cost for appraisal purposes; is
5 that right, Mr. Burke? The 10 per cent is included in
6 the very gross simplification I have made of your
7 computer run of avoided cost?

8 MR. BURKE: A. If you want to include,
9 it's there.

10 Q. Doesn't Ontario Hydro include that 10
11 per cent for evaluating demand management options?

12 A. Yes.

13 Q. Thank you. I certainly want to
14 include it, yes. At least that much.

15 The second example, page 3.

16 MR. SHALABY: A. Your word "avoided
17 cost" is avoided cost including a 10 per cent premium.

18 Q. Avoided cost for the purposes of
19 appraising the demand management option, that's right.
20 And that would include the 10 per cent preference
21 premium.

22 A. Avoided cost plus 10 per cent.

23 MS. FRASER: A. Which is exactly what we
24 use in the savings by design for our energy saving
25 option.

1 Q. Thank you.

2 The next example, a direct customer comes
3 to you this time, they can implement something for a
4 million dollars incremental cost. They have calculated
5 that their net present value savings over the same life
6 of the option is \$600,000, and they too ask just for
7 the incentive required to make them whole. They want
8 to do something good for the environment, they want a
9 little good public relations. So they say, "If you pay
10 us \$400,000 we will do this." If you do the avoided
11 cost run including the 10 per cent preference premium
12 and, lo and behold, the same number drops out the
13 bottom. The benefits to the system are exactly the
14 same as the case of the university that you just had to
15 turn away because the tests weren't met, a million
16 dollars, and so we get a passing of the total customer
17 cost test. And if I understand your evidence
18 correctly, and I am simplifying, but assuming that you
19 have to pay the \$400,000 to get this, you will pay the
20 \$400,000; is that right, to get this million dollars
21 worth of savings?

22 A. If you are dealing with the direct
23 customer, you are talking about then an industrial
24 customer, I would expect, so we are talking about the
25 accelerated payback program. Basically we would buy it

1 down to a year a half payback. So this one you are
2 essentially saying the payback is less than two years;
3 we would provide an incentive to bring it down to a
4 one-and-a-half year level.

5 Q. And at that point it would be
6 economic for the customer to implement themselves.
7 That's the purpose of buying it down; isn't it?

8 A. Yes.

9 What I don't understand between pages 2
10 and pages 3, is the calculation, the net present value
11 of savings, i.e., the energy savings in a particular
12 project where you end up with the avoided costs being
13 the same but the net present value of the electricity
14 savings being that much different with an advantage
15 going to a university which has, in all likelihood, a
16 lower load factor than a direct customer. But perhaps
17 you can explain your derivation of those numbers.

18 Q. If that becomes a problem, I will
19 certainly try.

20 These numbers are for example purposes
21 and I am after concepts here. I would imagine there is
22 a whole range of differences that I could postulate for
23 why it would cost someone this and what savings the
24 other party would get, different activities, different
25 buildings, et cetera.

1 If you bear with me for a second I will
2 go through these examples, and if it's a problem we
3 will talk about it in a minute.

4 I wonder if I could ask you to step
5 outside of your specific program with the buydown.
6 From a conceptual point of view, Hydro is willing to
7 pay the incentive to this customer of \$400,000, and the
8 way that it is actually paid, you buy down the payback
9 period, et cetera, it's something I will leave to the
10 program designers, but \$400,000 is paid to procure this
11 million dollars worth of savings to the system; is that
12 fair, from a conceptual point of view?

13 A. Yes, the avoided cost minus
14 incremental costs, again assuming zero program costs,
15 it would be the actual cost benefit ratio of one and it
16 would be -- go ahead.

17 Q. Thank you.

18 One more, and this is where the point
19 comes in.

20 The next page, page 4 of the exhibit, we
21 have another direct customer who comes to you, their
22 incremental cost is \$900,000 and their savings are the
23 same, \$600,000, except that they are not having such a
24 great year and they come to you and convince you that
25 unless you pay them \$550,000, they are not going to

1 bother doing this.

2 So, what we get is a net customer
3 benefit, which I indicated here of \$250,000, and you do
4 your avoided cost run and again we get a million
5 dollars. And based on the incremental cost of the
6 option, the total customer cost test is passed. And
7 assuming that you are convinced that unless you pay
8 550,000 you won't get this, you will pay 550,000 to get
9 the savings; is that correct?

10 I realize it doesn't sit comfortably,
11 but...

12 A. No. I am thinking of the non-profit
13 housing program where we are actually paying the
14 900,000, so...

15 Q. If you could just confirm something
16 for me. The revenues foregone by Ontario Hydro in this
17 last example, the \$600,000, the customer gave figures
18 that will save -- and this is implicit in everything we
19 have been talking about -- the foregone revenues don't
20 affect the total customer cost test at all; is that
21 right?

22 A. That's right. They are used in the
23 rate impact tests.

24 Q. And they also don't affect the
25 maximum incentive levels that are paid to the

1 participant as you have just said, because if you
2 netted out the participant's savings from the
3 incremental cost, you obviously wouldn't be paying the
4 \$550,000.

5 A. This is exactly where you get into a
6 program design issue and how you determine what the
7 incentive levels could be, should be, what it takes to
8 move the market. Obviously, that interrelationship
9 between the savings to the customer and the cost to the
10 customer, that gets right tied into the issue of
11 payback and where our incentives play with that. So, I
12 can't make any general rules about that because that's
13 exactly what I pay my department full of program
14 designers to do every day. If we could do it with one
15 general rule, I guess we could do it a little more
16 efficiently, but I don't think it's that simple.

17 Q. But the overriding general rule, the
18 total total customer cost test says that if customer B
19 absolutely won't do this unless you pay them 550,000,
20 which is \$250,000 more than what you would get if they
21 netted out their savings or Hydro's lost revenues, you
22 will pay the 550,00050. That's what the total customer
23 cost test tells you to do; is that right? You said a
24 minute ago that you will pay the 550,000.

25 A. The total customer cost test helps us

1 determine what is economic. And the roles that I am
2 operating on in terms of designing programs is that we
3 are going after all the economic demand management we
4 can get.

5 Q. And one of the rules that you are
6 operating on, one of your mandates is, you do the best
7 you can with program design, but you are authorized to
8 pay up to full avoided cost if that's what it takes to
9 get the measure. So you will pay \$550,000.

10 A. Again, I qualified that, that was a
11 specific instance, one particular project. It happened
12 to be fed right from the 150 kV line action, so there
13 wasn't distribution savings that would accrue to other
14 similar kinds of projects. It was an important
15 prototype, to get an early adopter going with that
16 technology.

17 I wouldn't want to say that that's the
18 general rule I give my program designers to design a
19 program by.

20 Q. Certainly, I don't have a problem
21 with that.

22 In this example you will pay \$550,000; is
23 that right, in this hypothetical?

24 A. Well, if we wanted to change the
25 example to non-profit housing program, I would pay

1 \$900,000.

2 Q. So the lost revenues don't at all
3 affect the incentive level?

4 I shouldn't put it that simply. they
5 enter into program considerations perhaps, but they
6 don't affect the bottom line. You will still pay
7 regardless of --

8 A. They don't effect whether or not it's
9 economic.

10 Q. And they don't affect the incentive
11 level that you will pay either if you can't keep it to
12 that level.

13 I am not being clear. Let me rephrase
14 it, it will be clear.

15 The incentive level in this hypothetical
16 isn't limited to \$300,000 because of Hydro's lost
17 revenues or because of the customer's bill savings, two
18 sides of the same coin? You are going to pay the
19 550,000 in this example?

20 A. Again, I will accept that these are
21 hypothetical programs and they bear not necessarily any
22 resemblance to programs Hydro has right now with these
23 kinds of calculations and these types -- this profile
24 of a project. I wouldn't want to characterize this as
25 a representative project under one of our programs and

1 this is the incentive, these are the savings.

2 Q. With the example you have told me
3 about, the non-profit housing where you pay the full
4 avoided cost, there were --

5 A. No, we don't pay the full avoided
6 cost there.

7 Q. I'm sorry.

8 A. We pay the full project costs.

9 Q. From a conceptual point of view, the
10 absolute incentive level would not be limited by the
11 bill savings to the customer; is that right?

12 A. Again, the reason why we are doing
13 that non-profit housing is because the costs of the
14 project would be borne by one group of people, the
15 benefits would be borne by another, and so because of
16 that split incentive basis, the customer, i.e., that
17 pays the bill, doesn't necessarily put the capital up,
18 and because of those program design considerations,
19 that then leads us to -- it's not a fact that we can
20 pay up to full avoided cost. As I said, we are not
21 paying anywhere near full avoided cost in the
22 non-profit housing program to pay full project cost.

23 Q. A few minutes ago you told me that
24 you will pay \$550,000 in this example; is that right?

25 A. Using your hypothetical example, the

1 incentive says \$550,000. So accepting the fact this is
2 a hypothetical, I guess that's what it says, so I guess
3 we are going to pay that.

4 Q. And that's in light of the \$600,000
5 revenue lost/customer bill savings that's on the line
6 above that. That doesn't change that you are going to
7 pay \$550,000; right?

8 A. If the hypothetical program you are
9 talking about is paying whatever, however you design
10 that incentive, that's what it is. That's what it is.

11 We do not have rules with respect to the
12 savings. That's right part of the whole issue in terms
13 of incentive level design, that where those savings do
14 accrue directly back to, say, the bottom line of the
15 entity making the investment, we will design our
16 incentive programs quite a bit different then where
17 there are situations of split incentives.

18 Q. I take it that that is a qualified
19 yes. Okay?

20 A. Yes, qualified.

21 Q. Thank you. All right. The last page
22 of the new exhibit collects all of these examples on
23 one page. It shows us that Ontario Hydro pays \$400,000
24 and \$550,000 to customers A and B respectively, each
25 time to get a million dollars worth of savings for the

1 system, yet the university would provide the same
2 savings for \$300,000 and Hydro says no.

3 MR. B. CAMPBELL: Mr. Chairman, I know my
4 friend is putting this as a hypothetical, but I wonder
5 at some point whether it is really useful to continue
6 with a hypothetical that is exactly contrary to the
7 strategic principles that this panel has spoken to with
8 respect to financial incentives for demand management.

9 The principles that are the guiding principles --

10 THE CHAIRMAN: Well, perhaps he can ask
11 the questions to the panel. I don't know whether you
12 should be introducing now whatever the strategic
13 principles are. The evidence is there and they can
14 comment on it if they want, but he has gone through
15 these examples that he has now collected together and
16 his question is quite a simple one; that is, at some
17 point, they are not prepared to pay \$300,000 and at
18 other points, they are prepared to pay 400 and 550.

19 Now, that question can be asked, I think,
20 and we can see what the results are.

21 MR. B. CAMPBELL: Well, Mr. Chairman, my
22 whole objection is that the hypothetical is that Hydro
23 is prepared to pay. I think these witnesses have made
24 it clear that Hydro is not prepared to simply use that
25 decision rule as simplistically as my friend is putting

1 forward. And my objection is simply, I wonder whether
2 it is useful to pursue this any further given that the
3 decision rules are not as my friend has stated.

4 THE CHAIRMAN: Well, it is assumed in
5 these examples that they are prepared to pay those
6 figures, that they are there. Whether they would or
7 not in real life may be something else, but they are
8 prepared to do that in these particular cases.

9 Now, let's now see what the questions are
10 and what responses we get.

11 MS. FRASER: Sorry, the one that we
12 haven't talked about yet is the net customer benefit
13 line and I am not sure how you in customer B, direct
14 customer B end up with that net -- that doesn't bear
15 any resemblance to the net customer cost test number
16 that we have talked about. And I think it may be
17 misleading because we have used net to be the net total
18 customer benefit and this is the net with respect to
19 that particular customer, correct?

20 MR. MONDROW: Q. Well, I haven't asked
21 you any questions about that, although I will in a
22 second, and we can certainly clarify any problems that
23 you are having in a minute.

24 MS. FRASER: A. Yes, okay.

25 Q. The problem that I have with these

1 examples is that in an ideal economy -- I understand
2 that in an ideal economy where all resources are
3 perfectly allocated, the efficiency measures in the
4 university's case are actually more expensive aside
5 from external benefits and on a purely monetary basis,
6 then the combustion turbine unit alternative, which is
7 the derivation of avoided cost, this is what the total
8 customer cost test tells us, right, a perfect economy,
9 an ideal allocation of resources?

10 MR. SHALABY: A. You are putting too
11 many things in one sentence here.

12 Q. Okay, we can slow down.

13 A. The piece about what avoided cost is
14 based on, I don't think you want to get into that now,
15 do you?

16 Q. Not if we don't have to.

17 A. We have spent enough time on it and
18 so let's leave out whether avoided cost is exactly a
19 combustion turbine unit or something else because it is
20 a little more complicated than that.

21 Q. Okay.

22 A. The idea of a perfectly efficient
23 economy, the point is what? The point is?

24 Q. The point is that the total customer
25 cost test tells us, in the university's case, you

1 shouldn't buy this, Ontario Hydro, because the
2 incremental cost is greater than your avoided cost.

3 A. That is correct.

4 Q. So in a perfect economy, it is
5 cheaper for everybody if you build new supply. That is
6 what the total customer cost test tells us, isn't it?

7 A. The "everybody" is again a
8 generalization, but for total customer, for all the
9 customers together, they are better off with the supply
10 option than with this demand option, yes.

11 Q. Okay.

12 A. Certainly a supplier of this
13 equipment is not better off with that decision.

14 Q. Okay. I just want to look at the
15 parties' perspectives for a second. From the
16 university's perspective in my first example, the
17 proposed efficiency retrofit pays because they break
18 even and they do something that they want to do,
19 something good for the environment.

20 And from Hydro's perspective and so its
21 customers' perspective, they pay only \$300,000 to get
22 the same million dollars worth of savings to the
23 system. But the total customer cost test says that the
24 university's case doesn't proceed and the other two do.

25 And, Ms. Fraser, perhaps this is where I

1 can clarify the \$250,000. In the case of customer B,
2 you are paying \$250,000 more than you would to the
3 university to get the same savings.

4 That is the result of all our discussion,
5 isn't it?

6 MS. FRASER: A. The savings that you are
7 talking about, I guess that is the line here 'worth',
8 and you have indicated that they are all worth a
9 million dollars.

10 What the total customer cost test tells
11 you is that if you take all the electricity customers
12 in the province and determine the net benefit of an
13 option, or at least three options to them, you can do
14 that calculation, which, if that is what you mean by
15 "worth", then your calculations in that line are all
16 wrong. In fact, the university example, the net
17 benefit to all the customers of that option is minus
18 \$100,000.

19 For the customer A project, the net
20 benefit for all the electricity customers of the
21 province is zero; and for customer B, the net benefit
22 for all the customers is \$100,000 plus.

23 Q. I am talking about the benefit to
24 Ontario Hydro's system. That is what the avoided cost
25 represents, doesn't it?

1 A. That is right. That is one element
2 in the total customer cost test calculation.

3 Q. And so Ontario Hydro buys a million
4 dollars worth of benefit to the bulk electrical system
5 for \$400,000 in the case of customer A and \$550,000 in
6 the case of customer B, but won't buy it for \$300,000
7 in the case of the university; is that right?

8 MR. SHALABY: A. That is right.

9 Q. Thank you.

10 A. The objective is not to get away with
11 the least amount of incentive; the objective is to look
12 at the total customer test. The way you are putting it
13 is as if Hydro should go and pursue opportunities that
14 are the least incentive possible. That is not the
15 objective.

16 The objective is to pursue opportunities
17 that reduce the total customer cost. So even though
18 there are opportunities that would need little
19 incentive but they are not economic, that is the point
20 of the entire example. There are opportunities that
21 need little incentive, but they aren't economic. We
22 don't pursue those.

23 Q. The savings to the system in each of
24 these three cases is a million dollars; is that right?

25 A. Yes, but it is a saving to all

1 customers, the system, plus whatever the customers pay
2 themselves is what we look for, not just the savings to
3 our system.

4 We are not looking entirely at minimizing
5 incentive and looking at our avoided cost. We are
6 looking also at the other side of the equation, what
7 the customer will incur.

8 Q. And by the customer, you mean--

9 A. The university.

10 Q. --the university.

11 A. --customer A or customer B.

12 Q. Well, the university incurs \$800,000
13 and it is very happy to do it. I am sorry.

14 MS. FRASER: A. I think what you have
15 then is an example where the benefits that accrue to
16 the university are not just energy saving benefits
17 obviously if they are prepared to do it.

18 This gets back to the example that I used
19 in the savings by design project, where the window film
20 required by regulation for aesthetic reasons was more
21 expensive than the window film offices for one of the
22 large downtown office towers that would save an amount
23 of energy. In that calculation, that project did not
24 pass the total customer cost test.

25 What we did was say there was a certain

1 proportion of that cost that was for aesthetic reasons
2 that had nothing to do with the cost benefit under the
3 total customer cost test, and used the proxy of regular
4 window film which is cost effective under the total
5 customer cost test and determined that that project was
6 cost beneficial from that point, from that point of
7 view.

8 We basically separated the costs and
9 benefits, so we were only dealing with the costs and
10 benefits relative to the electricity customers. They
11 don't necessarily have any -- yes, they don't place a
12 value on the aesthetics. They may, but they do that
13 through a whole different process, i.e. through
14 regulation via City Hall planning guidelines or
15 whatever, so it happens in a different way.

16 But we don't, as a rule - from a total
17 customer cost point of view - we can only look at the
18 costs and benefits relative to the electricity
19 customers.

20 Now, what you are doing is using the
21 Ontario Hydro utility cost test as whether something
22 would be a go or no go and I have indicated that that
23 is not what we used the Ontario Hydro utility cost test
24 for.

25 DR. CONNELL: Panel, maybe you can help

1 me understand customer B. Perhaps, Ms. Fraser, if I
2 could ask, with respect to the incentive stipulated in
3 this hypothetical example is 550,000.

4 Is it conceivable to you that if in your
5 program design you came up with a number of, let us
6 say, 500,000, that customer B would decline to
7 participate on those terms?

8 MS. FRASER: If this were an industrial
9 customer and we would be looking at this under our
10 accelerated payback program, we would essentially
11 expect the customer to implement this anyway. It is
12 less than the 1-1/2 year payback, so it would basically
13 not be eligible for an incentive.

14 That is why it was very important to put
15 the qualifications around it because this is not how we
16 would design incentives, using these sorts of mixtures
17 of energy savings and capital costs.

18 MR. MONDROW: I think, Mr. Chairman, now
19 would be a good time to take the lunch break.

20 THE CHAIRMAN: All right. We will break
21 until 2:30.

22 THE REGISTRAR: The hearing will adjourn
23 until 2:30.

24 ---Luncheon recess at 1:00 p.m.
25 ---On resuming at 2:34 p.m.

1 THE REGISTRAR: Please come to order.

2 This hearing is again in session. Be seated, please.

3 THE CHAIRMAN: We were just remarking
4 that the clock is always fast.

5 Is that everybody's impression or does it
6 just seem that way?

7 MR. B. CAMPBELL: Nobody is touching this
8 one. (Laughter)

9 THE CHAIRMAN: I would be very careful,
10 yes.

11 MR. MONDROW: Mr. Chairman, as it seems
12 is not uncommon, I may have to revise my time
13 projections. I might very well go to the end of the
14 day today, although I will be finished by then.

15 Q. Ms. Fraser, just before the break --
16 I am going to come back to this once more for a little
17 bit because I was getting confused as may have been
18 apparent.

19 MS. FRASER: A. Yes, and I think I
20 misspoke myself in terms of the payback for customer B.
21 From the information that is provided here, a simple
22 payback can't be calculated.

23 Q. I am sorry, could you repeat that?

24 A. From the information that is provided
25 here, a simple payback on these projects can't be

1 calculated.

2 Q. You mentioned before the break that
3 what we were talking about at that point was the
4 utility cost test. I was under the impression that I
5 was talking about the total customer cost test.

6 Were you talking about the utility cost
7 test before the break?

8 A. Yes. Insofar as if you were just
9 taking Ontario Hydro's avoided cost and subtracting
10 incentives from it, and we have agreed that there's no
11 program cost involved in this hypothetical, that
12 essentially is the utility cost test that you are
13 trying to apply as opposed to the total customer cost
14 test across these three examples, a variation of it
15 anyway.

16 Q. When I make the statement --

17 THE CHAIRMAN: I am sorry, I am a little
18 bit behind you.

19 Why do you say that you can't calculate
20 the payback from these examples? The payback is, when
21 do they recover their incremental cost? Is that what
22 the payback is?

23 MS. FRASER: Well, what is not clear, the
24 incremental cost of -- if that is the net present value
25 of the incremental cost -- this is the net present

1 value of the savings, it is not clear what the stream
2 of the savings are over.

3 THE CHAIRMAN: Oh, I see. It is the cash
4 flow that you are talking about?

5 MS. FRASER: Yes.

6 THE CHAIRMAN: All right.

7 MS. FRASER: And if you assumed that they
8 were both on the same basis, in none of these examples
9 would they ever pay back because the net present value
10 of the savings is less than the incremental cost in all
11 cases. So it would never be economic from a customer's
12 point of view to do any of these things, from "a"
13 customer point of view, not "the customers'" point of
14 view.

15 MR. MONDROW: Q. You are telling me now
16 that in none of these examples would it be worthwhile
17 for the customer to adopt the option?

18 A. Naturally. If you just take the
19 incremental cost against the net present value of
20 savings, assuming that what you are looking at is two
21 cash flow streams, obviously you are never going to pay
22 back what your cost was without an incentive.

23 Q. Excuse me just for a minute.

24 If you are saying that none of these
25 options would be adopted naturally, then I have no

1 problem with that.

2 The point of the hypotheticals was to
3 determine what incentive rates to be paid for which
4 options; for instance, with customer A, you are agreed,
5 I think, that if Hydro pays a \$400,000 incentive,
6 customer A will adopt the efficiency option; is that
7 correct?

8 MS. FRASER: A. No. That is what you
9 said these represented. I had no knowledge whether or
10 not the customer would adopt these or not. But if you
11 are just looking at the issue of incremental cost, a
12 net present value assumed these are streams of either
13 benefit or cost.

14 Now, if incremental -- like, I am not
15 clear if this incremental cost is the net present value
16 of the incremental cost, in which case there is never a
17 payback on any of these projects.

18 Q. If the incremental --

19 A. This isn't what we would be looking
20 at in the usual situation. We would be looking at
21 places where you would end up with -- the payback is
22 too long and then we bring incentives in. We rarely --
23 I can't envision a project where we would have a
24 situation where the incremental cost exceeded the
25 savings and it still passed the total customer cost

1 test, but I may be...

2 Q. I took you through a hypothetical
3 here in the case of customer A. The incremental cost
4 is the cost that the customer would incur now to
5 install an option. And I am asking you to assume that
6 the avoided cost that you calculate for that option is
7 also a million dollars.

8 And I am also asking you to assume that
9 if we go back to page 3 of the exhibit, the customer
10 will save in net present value terms \$600,000 on its
11 electricity bills.

12 And so the customer comes to you and
13 says, I will do this, I will adopt this option if you
14 make me whole; will you pay me \$400,000?

15 And I thought we had determined before
16 lunch that because the option passes the avoided cost,
17 the total customer cost test, which means that it is,
18 in my hypothetical, equal to avoided cost, Hydro will
19 pay the \$400,000 to the customer to get this option
20 implemented.

21 Am I understanding you correctly?

22 A. In the sense if there were a
23 hypothetical program that had an incentive designed
24 this way, if that is what you have presented to us,
25 yes.

1 Q. Okay. From a conceptual point of
2 view, this describes the total customer cost test and
3 how it interacts with proposed options.

4 A. Incentives have nothing to do with
5 the total customer cost test.

6 Q. Right. The option passes the total
7 customer cost test and so it is implemented; is that
8 right?

9 A. If the option passes the total
10 customer cost test, that is essentially a go or no go
11 kind of a -- if it doesn't pass, it is not in the
12 potential, it is not in the program.

13 Q. If customer A had passed the test,
14 and so it is a go. We have to determine what Hydro
15 will pay for that.

16 A. Right.

17 Q. And the customer asks for \$400,000.
18 And my question then is, will Hydro pay the \$400,000 in
19 this case?

20 A. From the information that you have
21 given, I can't answer that question relative to our
22 current program. I am accepting that in the
23 hypothetical, you have designed a program that pays him
24 \$400,000.

25 But what I am pointing out to you is in

1 terms of hypothetical examples, a situation where the
2 incremental cost exceeded the stream of savings, that
3 means that by the time the piece of machinery or
4 equipment has burned out before you have got enough
5 savings to pay for it.

6 Q. Maybe we can clarify this another way
7 and this was another question I wanted to ask you. You
8 told Dr. Connell before the break that in the case of
9 customer B, you would expect self-implementation and
10 you just mentioned some --

11 A. That is when I said I misspoke myself
12 in terms of doing this calculation, that I couldn't do
13 that calculation, so I couldn't make the assumption
14 that this would be -- As a matter of fact, if what you
15 have told me now is that these are both on equal
16 footing, again, there is no payback. The equipment
17 burns out or dies before the incremental cost is
18 recovered. So it is not economic just from the total -
19 never mind the total customer cost test; it is just not
20 economic from the individual project.

21 [2:44 p.m.] Q. Rather than take up more time here,
22 I'm going to discuss this with Mr. Diener and, if
23 necessary, I will come back after the break and ask him
24 a question.

25 THE CHAIRMAN: Perhaps I could just ask a

1 question with some trepidation. I'm looking at
2 customer B.

3 MS. FRASER: Yes.

4 THE CHAIRMAN: The incremental cost is
5 \$900,000, and that's the present value figure in your
6 view?

7 MS. FRASER: That's what I understood
8 from --

9 THE CHAIRMAN: And the savings are
10 \$600,000, and Hydro, let's say, is prepared to pay an
11 incentive of \$550,000. Will that incentive reduce this
12 incremental cost?

13 MS. FRASER: Correct. Reduces the
14 participant's cost.

15 THE CHAIRMAN: The participant's cost.
16 And therefore would not the savings of \$600,000 present
17 value at that point exceed then the incremental costs,
18 after the incentive has been refurbished?

19 MS. FRASER: Oh, yes, at that point, yes.

20 THE CHAIRMAN: And why is then that not
21 economic, from the customer's point of view?

22 MS. FRASER: I'm only looking at before
23 the incentive is applied to it.

24 THE CHAIRMAN: Well, I thought we all
25 agreed -- excuse me, I didn't mean to interrupt, but I

1 thought we all agreed that, absent the incentive, no
2 customer would do this, and that is one of the
3 haulmarks of the whole program?

4 MS. FRASER: Absolutely.

5 THE CHAIRMAN: But once the incentive has
6 been paid, why is it uneconomic for the customer to go
7 ahead on that basis?

8 MS. FRASER: If you just look at the
9 piece of equipment and what saving, the steam of
10 savings, that piece of equipment would be retired
11 before you'd get your savings out of it.

12 THE CHAIRMAN: The stream of savings are
13 the \$600,000 projected out over the life of the
14 equipment. But what was once \$900,000 has become
15 something less than that.

16 MS. FRASER: True.

17 THE CHAIRMAN: So that would --

18 MS. FRASER: Yes, once we put an
19 incentive to it, that changes the -- you are using the
20 participant cost test at that point.

21 THE CHAIRMAN: So once the incentive is
22 there, then the customer might do this?

23 MS. FRASER: That's right, yes.

24 MR. MONDROW: Q. Isn't that true of all
25 programs for which incentives are paid? Before the

1 incentive, the customer would likely not undertake the
2 option, and the reason incentives are paid is to --

3 MS. FRASER: A. Exactly.

4 Q. -- the customer undertake the option.

5 MS. FRASER: A. Exactly. I think all I
6 was commenting on was the fact that usually you have a
7 situation on which, you know, the payback, let's say
8 the incremental cost of something was \$900,000. If the
9 savings were 300 each year, a simple payback would be
10 three years. And all you are doing with incentives is
11 bringing that payback down to a point which crosses the
12 threshold of the decision maker.

13 Now in this case the payback time is
14 absolutely infinite, unless I'm missing something.
15 Basically I don't think there is enough information
16 here to make a determination about what the incentives
17 might be under any of our programs.

18 MR. BURKE: A. Maybe just observe that
19 if for instance there was a piece of equipment that had
20 a 20-year life, and a \$600,000 --

21 Q. I will interrupt you for a second. I
22 think I made it clear that I was assuming a three-year
23 life. I'm not sure if that changes your comment or
24 not.

25 A. Three-year life, you said that at

1 some point?

2 Q. Yes. Well, If I didn't say that, I
3 was assuming a three-year life for the option, and all
4 of these are net present value over three years. I'm
5 assuming that the option is exhausted after three
6 years. I apologize if I didn't make that clear.

7 A. I have to agree with Ms. Fraser then.
8 It definitely wouldn't pay out in the life of the
9 option.

10 The example is counterintuitive, because
11 typically the level of rates per kilowatthour is at or
12 above the avoided cost per kilowatthour. So that you
13 would expect to see the NPD of savings exceed the
14 avoided cost in the calculations that you are doing.
15 To have it the other way around implies a very unusual
16 load factor for the load being saved.

17 Q. Okay, I'm afraid I'm going to have to
18 digest this. I will come back to it if appropriate.

19 I'd like to move on then. Ms. Fraser,
20 you spoke with Mrs. Couban, this is quite awhile ago
21 now, about demand side bidding systems for procuring
22 energy savings, and you were talking specifically about
23 energy service companies. And I believe that your
24 evidence was that your understanding of the feedback to
25 date in North America is that bidding systems haven't

1 worked very well, and in fact you mentioned one energy
2 services company that having gotten through the bidding
3 system, would never do it again. Could you elaborate
4 on what the problem is with the bidding systems?

5 MS. FRASER: A. The issue from bidding,
6 as I point out, our information is based on the
7 consultant's report that we did towards the end of last
8 year - I'm just looking for a reference for it - and
9 that basically indicated that at that time that the
10 jury was still out in terms of using bidding on demand
11 side projects. And by demand side projects in this
12 context, I mean energy efficiency improvements. I'm
13 not speaking about cogeneration projects.

14 Using that as a mechanism or a proxy for
15 a level playing field with supply side resources, that
16 the result of that consultant study was that the jury
17 was still out, there wasn't enough information in terms
18 of the actual either responses to bids, or whether or
19 not the savings had materialized that had been
20 "contracted for."

21 Subsequently to that research, there were
22 a number of papers presented at the conference in
23 Boston, demand side management conference in June of
24 this year and discussions which ensued in the question
25 period after that, particularly from two bidders, and

1 discussions I had with them subsequently, certainly
2 indicated that there was a lot of competition now
3 evolving between energy service companies and
4 utilities, rather than co-operation. And that the
5 intent behind our guaranteed energy performance program
6 was rather to leverage a cooperative approach as
7 opposed to a competitive approach to demand side
8 management. So that was the gist of what I was talking
9 about with Ms. Couban.

10 Q. Could you explain to me what about
11 the situation the approach makes a competitive -- makes
12 for a competitive atmosphere between the utility and
13 the energy services company? What is it that the
14 competition is about?

15 A. It is whether or not the program,
16 their other programs, outside of demand side bidding,
17 can achieve those savings more cost effectively, and it
18 gets even more complicated, I think, with respect to
19 the way in which incentives are being provided to
20 utilities to participate and develop demand side
21 programs of any kind. And in some cases, I gather that
22 they don't get the same credit for the same incentive
23 for something that has been saved by an energy service
24 company that they do for their own programs. So they
25 were saying that competition between them on programs,

1 and sort of the programs cannibalizing each other,
2 which I don't think necessarily has to be the case at
3 all.

4 Q. But in the interim, Hydro has
5 adopted, you have told us, a negotiated approach with
6 energy services companies.

7 A. Yes, much more of a negotiated
8 approach. It's called the Guaranteed Energy
9 Performance Program, and it has a range of incentives
10 that end up producing a blended incentive rate that we
11 use to calculate the incentives and pay over the life
12 of the contract, based on actual energy savings that
13 have been verified.

14 Q. What element in here is negotiated?

15 A. It is really the blending of the rate
16 and the kinds of projects that they include in the
17 contract. Obviously one of the things that we try to
18 negotiate is to get more, longer-lasting kinds of
19 savings into the contract, things with longer paybacks,
20 so that they have expanded their contract beyond the
21 normal energy service contract, and so that whole
22 process is a negotiation as opposed to a bid process.

23 Q. So Hydro uses its leverage to get the
24 energy services companies to kind of expand their
25 horizons of options that are participating, is that

1 right?

2 A. Exactly, and to expand to the
3 customers that they intend to target.

4 Q. Thank you.

5 A few weeks ago, Panel, we got Exhibit
6 258, which introduced fuel switching standards, and if
7 we can get that out and turn to page 7, I believe, of
8 that exhibit, we see there a forecast of an additional
9 1630 megawatts by the year 2000, reduction from peak
10 demand. And Mr. Wilson, at transcript volume 53, page
11 9661, you said that Hydro will get this additional --
12 these additional savings with the assistance of the
13 government, is that right?

14 MR. WILSON: A. Yes.

15 Q. If the government legislates fuel
16 switching and amends the Energy Efficiency Act to
17 enforce higher standards, it seems to me that with all
18 due respect it is the government that is getting these
19 additional savings. I appreciate that Hydro is totally
20 behind them, but don't you think we should be giving
21 the government credit for these savings, as opposed to
22 Ontario Hydro?

23 MR. WILSON: A. Oh, I think so too, yes.
24 We should give the government credit.

25 Q. Thank You. Of course, the important

1 thing is that we do get the addition.

2 A. Exactly.

3 Q. Table 5 of that exhibit, which is the
4 next page over from page 7, sets out various cases,
5 and, Mr. Wilson, you focused much of your evidence on
6 case C. The way I read the table, Hydro would under
7 case C be getting 1550 megawatts by the year 2000, is
8 that right, of EEI?

9 THE CHAIRMAN: I am sorry, which case was
10 that, Mr. Mondrow?

11 MR. MONDROW: Case C in Table 5.

12 THE CHAIRMAN: Yes. What number did you
13 say?

14 MR. MONDROW: I said 1550 megawatts.

15 Q. Case C shows a total program driven
16 EEI improvements of 1010 megawatts, and 540 megawatts
17 under the program sub-box on that table, and I read
18 that as being Hydro's contribution to EEI under this
19 scenario. Is that right, Mr. Wilson, 1550 megawatts?

20 MR. WILSON: A. Yes, that's right. We
21 spent some time talking about this table before.

22 Q. Yes.

23 A. If you have a look at that table and
24 read across case C, under "Programs" you see there is
25 540 megawatts for end uses also affected by standards,

1 and that represents the, you know, what we thought we
2 could accomplish by pushing highly efficient products
3 between now and 1995, and basically establishing market
4 conditions that permit the government to adopt the
5 standards, without causing a huge outcry and major
6 dislocation of the economy, or basically the electrical
7 manufacturers and distributors' part of the economy.

8 So although I say the government deserve
9 credit if they can pull this off, and I really do think
10 they would deserve credit, it is not really a question
11 of keeping score. I think that was our point from the
12 outset. It is a joint effort. If it is not a joint
13 effort, it won't work.

14 Q. But in terms of Ontario Hydro's
15 programs, and I realize that what you're talking about
16 is that much of the field would, under this scenario,
17 be occupied by the government, but Ontario Hydro's
18 target for the year 2000 has decreased actually by 450
19 megawatts, although overall Ontario fares much better,
20 is that right?

21 A. The portion which is directly fuelled
22 by incentive payments from Ontario Hydro is decreased.
23 Now we have talked about incentives taking a variety of
24 forms, from research to standard support, a whole host
25 of things which don't involve direct cash payments to

1 customers or to decision makers. And so I would -- I
2 don't think it is fair to characterize it as an "us and
3 them" kind of thing. So I really don't accept that.

4 Q. I don't mean to be pejorative, but
5 I'm just trying to get the numbers for evaluating
6 Ontario Hydro's programs under this scenario, and
7 relative to the 2000 by 2000 target, we have come down
8 a bit because of the other factors now in play in the
9 marketplace.

10 A. Well, I'd maintain the fact they have
11 gone up, not down.

12 Q. Okay, thank you.

13 Incidentally, Ms. Fraser, you mentioned a
14 few weeks ago that with the achievement of demand
15 management targets, your own remuneration from Ontario
16 Hydro would be affected. There are incentives within
17 energy management branch that are tied to achievement
18 of demand management targets?

19 MS. FRASER: A. All of the sector
20 managers, myself being manager of commercial,
21 industrial, residential; directors over that, the
22 vice-president, plus the vice-president regions branch
23 and the management through the regions branch that are
24 responsible for our field staff, share responsibility
25 for achieving the demand management targets.

1 My performance contract, for instance for
2 this year, includes the contribution that I, with the
3 help of my department, have to make to the achievement
4 of the targets for commercial. And my performance --
5 the degree to which I can achieve that performance
6 contract determines any merit pay that I might get.

7 Q. I don't want to get too personal
8 here. Are we talking about a lot of money here, or are
9 we talking about a token incentive in your estimate?

10 A. We are talking about small increments
11 at the top.

12 Q. Small increments. Okay, thank you.

13 A. So far we haven't started talking
14 about decrements, so...

15 Q. I'd like to move to a new area,
16 please, Panel. I want to talk about demand discount
17 service. If you could turn up Interrogatory 2.14.101,
18 the response to that interrogatory.

19 MS. HARPER: A. Yes.

20 Q. Mr. Harper, this is your area.

21 A. Yes.

22 THE CHAIRMAN: Do we have those, Mr.
23 Lucas?

24 MR. MONDROW: These are the
25 interrogatories from --

1 THE REGISTRAR: I am sorry?

2 THE CHAIRMAN: They were not an exhibit.

3 They were put up as part of the material.

4 MR. MONDROW: I do have a package. I had
5 advised Ms. Morrison which interrogatories I would be
6 referring to, but I have some packages, if it would
7 help.

8 THE CHAIRMAN: All right.

9 MR. MONDROW: I guess then, Mr. Chairman,
10 this should get a number, this interrogatory?

11 THE CHAIRMAN: This interrogatory should
12 get 260 --

13 THE REGISTRAR: 261.57.

14 THE CHAIRMAN: 12.14.101.

15 ---EXHIBIT NO. 261.57: Interrogatory No. 12.14.101.

16 MR. MONDROW: Q. Okay, in response to
17 this interrogatory, Mr. Harper, we received a paper
18 entitled "Replacement of Capacity Interruptible Power
19 with Discount Demand Service." I will refer to
20 discount demand service as DDS for ease.

21 MR. HARPER: A. That's fine.

22 Q. So the DDS program is another form of
23 capacity interruptible load. It is an interruptible
24 program, is that right?

25 A. Yes.

1 Q. I just want to quickly go through my
2 understanding of the interruptibles concept. It is my
3 understanding that interruptibles allow Ontario Hydro
4 to cut power up to a maximum duration and a maximum
5 amount of energy at any given time upon notification to
6 the customer, the interruptible customer. And this
7 provides relief to the system under what are termed
8 emergency conditions. And we see that term set out at
9 the first page of the executive summary to this paper,
10 which is after the prefix in the table of contents, the
11 last sentence of the first paragraph.

12 So in essence anytime Hydro has to dip
13 into its 24 per cent reserve margin, we have a
14 potential emergency condition, is that right?

15 [3:04 p.m.] MR. HARPER: A. It's not really when we
16 have to have to dip into the 24 per cent. Essentially
17 these customers are served to a large extent out of
18 that 24 per cent reserve margin. When reserves get
19 even tighter still to the point where firm service is
20 at risk, that's when these customers are interrupted.

21 Q. So, the service that these customers
22 get on a fairly regular basis, the interruptions are
23 for short durations and at certain times, other than
24 that they are getting power. Are you saying that the
25 power that they are getting is conceptually coming out

1 of that 24 per cent reserve space that the system uses?

2 A. Yes. I think conceptually in a
3 fairly simplistic way, that's the easy easiest way to
4 look at it, is that if you didn't plan a system with
5 any reserves and firm power was always at the point of
6 capacity, then there would be no room at all.

7 Q. So, in an emergency condition then,
8 cutting these customers, in essence, is kind of a
9 floating buffer, it brings the system back up to a
10 level that the operators are comfortable with?

11 A. Yes.

12 Q. If you will allow me to again
13 conceptualize for a minute. It seems that purchasing
14 DDS is like purchasing insurance against the
15 availability of electricity. You have interruptibles
16 in the wings and you pay them, you get a discount,
17 rather, on their bills - and I will go into the
18 specifics of that in a minute - and in exchange for
19 that fee you know that when the demand hits a critical
20 level you can cut them back and the system will go on
21 operating as it should. It's kind of an insurance; is
22 that fair, do you think?

23 A. I don't know whether I would
24 characterize it as insurance.

25 Really what you have done is, instead of

1 having them as firm customers and having to build
2 capacity for them, they are interruptible and therefore
3 you don't have to build that capacity and put it in
4 place for them. It's therefore on an ongoing basis
5 there is a savings accruing to the system because you
6 have not had to put that load into your planning
7 requirements and build capacity to meet it. So, I
8 don't view it as an insurance program.

9 Q. Well, Hydro knows that it can always
10 cut those customers if it has a problem; is that right?

11 A. Yes.

12 Q. And in exchange for that ability
13 Hydro pays something to those customers--

14 A. Yes.

15 Q. --or those customers save something
16 on their bills. So, Hydro is, in effect, buying --

17 A. We are essentially buying capacity.

18 Q. But capacity only when Hydro is in an
19 emergency situation, not capacity that you use all the
20 time; is that right?

21 A. Maybe Mr. Shalaby is probably better
22 at this than I am, but we don't use all our capacity
23 all the time anyways. It's only during peak periods
24 and in emergency conditions that we would actually be
25 using all the capacity on the system anyway.

1 Q. Is there a maximum amount of
2 interruptibles contracted that's useful to the system?

3 MR. SHALABY: A. I think we answered an
4 interrogatory to that effect. My recollection is that
5 we said that there is no theoretical reason why you
6 wouldn't have more and more interruptible, but there
7 are practical limits to it.

8 Q. But practically, considering the
9 state we are in now, we can use a lot more
10 interruptibles, at least in the order of several
11 thousand megawatts of interruptibles, if everything
12 else being equal; is that fair?

13 A. Their utility, their value
14 diminishes. The more you take on, the less value it
15 will become, because you can only interrupt them for a
16 limited period of time.

17 In the extreme you cannot have a system
18 that has no generation and a lot of interruptible
19 customers. So, the extreme gets very silly.

20 Q. We don't have interruptibles
21 contracted up to the 24 per cent reserve margin that
22 Hydro has told us you operate with; is that right? The
23 number of megawatts contracted as interruptible now is
24 significantly less than that figure, that 24 per cent?

25 A. It is less than 24 per cent, yes.

1 Q. So there is a lot more room. We
2 could use more interruptibles.

3 I understand what you are saying, that at
4 the extremes the picture changes, but from where we are
5 at now, if we could get a few thousand more megawatts
6 of interruptibles, it would be a benefit to the system,
7 everything else being equal; is that fair?

8 A. There will be a benefit, yes, anybody
9 who is willing to sign up--

10 Q. Should come and see you.

11 A. --to be interrupted when we are in
12 trouble is a benefit. But that benefit is reduced the
13 more contracts you sign up.

14 Q. Fine. Thanks.

15 At page 1 of the paper, and this is now
16 page No. 1, there is a heading "Recent Status" and
17 there is a description in that section about problems
18 that Ontario Hydro has been having, apparently
19 following a high point of interruptions to
20 interruptible customers there have been a lot of
21 defections, a lot of defections from this service.

22 Now, when an interruptible gives you
23 notice that they want to convert to firm service from
24 interruptible service, they actually remain
25 interruptible for two years and then they become

1 something called quasi firm for another three years; is
2 that right?

3 MR. HARPER: A. That's correct.

4 Q. And the 5-year notice period I guess
5 gives Hydro time to readjust the system and make the
6 operating decisions and the capacity, I guess, addition
7 decisions that it feels it has to; is that right? It's
8 a lead time?

9 A. That's correct. The idea of the
10 5-year period is to allow the Hydro planners and
11 operators time to readjust their plans accordingly.

12 Q. And when a customer is classified as
13 quasi firm, it means that they can still be cut and
14 they can still get an energy credit when actually cut,
15 which is the amount that they get paid when their power
16 is interrupted on a per kilowatthour basis. But they
17 don't get a monthly discount in their peak demand, in
18 their bill for the peak demand for that month, which is
19 the other part of the rate structure; is that right?

20 So they get half the rate structure, they
21 get the energy credit but they don't get the monthly
22 demand discount anymore for that last three years?

23 A. Yes.

24 Q. Is this in effect -- I know it's not
25 intended this way, but the effect it seems is a penalty

1 for converting off of interruptible service. Someone
2 who has decided to convert off not only has all the
3 obligations but gets only part of the benefits of the
4 service?

5 A. I wouldn't say they have all the
6 obligations. There are a number of control or action
7 items that power system operators take when the system
8 starts to become capacity or energy deficient. And
9 really what happens is that at a certain point in time
10 they decide they are going to have to cut interruptible
11 customers.

12 There are a number of other control
13 actions that they take after that before they would cut
14 the quasi firm customers.

15 So, there is a very distinct difference
16 between those customers in terms of where they come in
17 the pecking order of being cut. So the odds of being
18 cut when you are quasi firm are quite a bit less than
19 when you are just an interruptible customer.

20 I guess we have a great time coming up
21 with names, quasi firm, quasi interruptible, but they
22 are not a fully interruptible customer and so therefore
23 they don't get the benefit of being interruptible in
24 terms of the discount and the rebate.

25 Q. And so the decrease in obligations in

1 Ontario Hydro's estimate is roughly commensurate with
2 the decreased benefits that this quasi firm customer
3 gets for those three years?

4 A. I don't know if it's exactly
5 commensurate. I think it is more a matter that we were
6 trying to acknowledge that they were getting service
7 that was somewhat more firm than the interruptible
8 customers and therefore they shouldn't be getting the
9 same level of rate discount. And this particular
10 mechanism that we used was a fairly easy one because
11 there is a two-part rate and you can pay one part but
12 not the other.

13 Q. From the perspective of a customer who
14 is considering going on to interruptible service, would
15 this potential, if the customer changes it's mind of
16 three years with a lot of the obligations, though not
17 all as you have explained, and not all of the benefits,
18 do you think that would be a disincentive for that
19 potential interruptible customer?

20 A. No, I don't believe so. We actually,
21 in coming up with this particular form of service, we
22 had some discussions with actual interruptible
23 customers to find out what they perceived as being fair
24 from their perspective, or what they saw as being more
25 preferable. And from their point of view this option

1 of becoming quasi firm and only getting the energy
2 credit after two years was preferable to, say, to being
3 maintained on interruptible power for the full five
4 years with the full discount. From our perspective, it
5 gave our firm customers exactly the same protection as
6 if they had remained interruptible.

7 Q. Thank you. And the second paragraph
8 under the heading "Recent Status" there is some figures
9 given, and I have down a quick calculation. I will
10 just ask you to confirm the range here. It seems that
11 there is about between, I guess it was 1988, and the
12 projection for January 1991 contained in the paper,
13 there is about a 62 per cent decrease. It's over three
14 years in the total interruptible contracts in terms of
15 megawatts. Is that roughly about right, 62 per cent,
16 60 per cent?

17 A. How did you come up with the 62 per
18 cent?

19 Q. Sure, I can explain it.
20 It says there in the second paragraph,
21 and I assume this runs from 1988, it says within the
22 next few months customers requested to convert 143.7
23 megawatts, and that at that time was 12 per cent of the
24 total contracts, and just by doing the reverse
25 calculation there.

1 A. Yes, I think you're right. That's
2 right. Something in that order. If you take the 143
3 divide in the 82.5 and then acknowledge what has taken
4 place through 1990, which is the 187 megawatts, I will
5 accept your arithmetic. When you sum those up and
6 divide by the contract, it's probably in the order of
7 20/30 per cent.

8 Q. Thank you. Just for the benefit of
9 the reader, or the listeners, there is the figure given
10 at the bottom of that paragraph, projections for
11 January 1991 and it says 991 megawatts expected at that
12 time, January 1991. So that's the basis of the figure,
13 the range of which you have just confirmed for me?

14 A. Not entirely, no. Because if you
15 recall our earlier conversation, the customers have to
16 give a two-year notice. So, as noted in the text here,
17 187.4 megawatts of contracted interruptible load to
18 date that had been requested for conversion in 1990,
19 that would still be interruptible in 1991. It would
20 not be until two years after the notice date that the
21 action became quasi firm.

22 Q. Right. There is a lag.

23 A. There is a lag. So given the notice
24 we received and accounting for the lag and not all
25 those notices will have translated into people actually

1 being off of interruptible service as at January 1991,
2 that's how you have come with the 991 megawatts.

3 Q. Right. But there are significant
4 percentages of the customers on their way out from
5 this?

6 A. Yes. I think that's shown if you
7 read the last sentence of that second paragraph there
8 by the fact of the 250 megawatts of notices of
9 conversions still outstanding.

10 Q. Right. Okay. Thank you.

11 it's important then, if possible, to get
12 the contracted amount of interruptibles back up. In
13 fact, in HR18, the Ontario Energy Board recommended
14 that Hydro revisit the question of interruptibles and
15 change the program, and I think they said something to
16 the effect of paying a level more commensurate with
17 system benefits. They were interested in getting more
18 interruptibles and we see that this DDS proposal is the
19 result of that Ontario Energy Board concern, and the
20 aim of this proposal is to in fact shape up in that
21 area, to try to get more interruptibles and more
22 benefit for the system; is that fair?

23 A. It's fair except in the sense I think
24 it's a concern not only to the Ontario Energy Board but
25 also of Ontario Hydro itself.

1 Q. Certainly, certainly.

2 Okay, I want to talk about the rate
3 structure for a couple of minutes. It's something that
4 we spoke about very superficially a second ago.

5 If we start at page 15 of this paper
6 there is a description of the DDS rate structure. It
7 seems to me there are two basic concepts to the benefit
8 to the system of interruptibles. There are capital
9 costs that are avoided due to the interruptibles. You
10 mentioned a minute ago that you don't have to build
11 capacity for the block of demand that is interruptible,
12 and then the second aspect is that there are operating
13 cost savings when the customers are in fact
14 interrupted; is that conceptually right?

15 A. Yes, that would be correct, if you
16 think of it in the context if you had had to build a
17 particular facility, then you would actually have to
18 operate it at certain points in time during the year,
19 and so you would actually incur those operating costs
20 as well as the capital costs associated with that
21 facility.

22 Q. And conceptually matching the savings
23 with the rate structure - and there are qualifications
24 which is we will talk about in a minute - but there are
25 two ways that savings to the system translate into a

1 .- rate structure under the DDS format. There is a demand
2 discount which is a reduced demand charge on the peak
3 interruptible capacity used in a given month of the
4 interruptible customer. That interruptible customer
5 gets a discount every month because it's interruptible.
6 And on top of that, when power is in fact interrupted
7 the customer gets what is termed as an energy credit, a
8 per kilowatthour payment for the kilowatthours
9 interrupted; is that right?

10 A. Yes.

11 Q. And on page 16 of the paper, there
12 are three alternative rates for DDS given in Table 7.
13 The first alternative headed up with the numeral A,
14 there is a 1.96 cent per kilowatthour energy credit.
15 Is this figure of the order of the actual operating
16 savings that Ontario Hydro experiences when a customer
17 is interrupted?

18 A. It's an estimate of what the net
19 operating savings would be. And when I say "net", I
20 mean the difference between the fueling or operating
21 costs of the unit and the revenues that you would have
22 received from that customer if you actually had to
23 serve him, which you are not receiving now.

24 Q. Okay. Now, the rate structure that
25 Ontario Hydro has actually chosen for the DDS program

1 credits a large part of the avoided capital cost that
2 we spoke of a second ago to the demand discount, which
3 is given up front to the customer, but it also combines
4 part of these avoided capital costs into the energy
5 credit, so the energy credit pays something more than
6 the savings, the net operating savings that Hydro
7 experiences when the customer is interrupted; is that
8 right?

9 A. Yes, that's correct.

10 Q. And the value assigned to the energy
11 credit is 10 cents a kilowatthour; is that right?

12 A. Yes, that is correct.

13 Q. You can see that.

14 On page 16, again in the second last
15 paragraph, we see the rationale for this choice and
16 there are two rationales given. It shares the risk
17 associated with forecasting the hours of interruption
18 in a given year between the customer and Ontario Hydro,
19 and it positions interruptibles as a dispatchable
20 resource. Am I reading that correctly?

1 lose production and send people home, or sometimes what
2 happens is they don't up finishing the product, it
3 isn't such a refined product as it used to be before
4 and they have to sell it in a more raw form and they
5 don't make the same markup or value added on it. It's
6 trying to recognize it's really when we cut the
7 customers is when they experience the inconvenience and
8 when they experience the costs, and to some extent this
9 better helps match the form of the rate we are giving
10 them with the nature of the cost that they are
11 incurring.

12 Q. Okay. On the dispatchability point
13 for a second. Does this, in effect, set up 10 cents a
14 kilowatthour as a cap on what Ontario Hydro will have
15 to pay for alternative sources of emergency power, like
16 purchases, for example? Is that what the
17 dispatchability is all about?

18 A. It could, in a sense, yes. To the
19 extent that if you were to say I can either cut
20 interruptible customers and pay them a rebate of 10
21 cents a kilowatthour, or alternatively, if it's
22 available and if I can find a source of purchase power
23 that's available for, say, 8 cents a kilowatthour, it
24 would be a more economic decision on the part of the
25 power system operators to purchase that power.

1 The thing with interruptible is, it's
2 either, (A), that economic power is not there at an
3 economic price, or, (B), it's not there all; you still
4 have the option of cutting those customers.

5 Q. So, would it be fair to say that this
6 is, in effect, another kind of insurance, insurance
7 against the maximum that Hydro will have to pay in an
8 emergency situation to bring the system back up to a
9 comfortable operating level?

10 A. Again, I am struggling a bit with the
11 term "insurance". I think it again gives our operators
12 some more economic options to look at when they are
13 trying to figure out how best to meet that particular
14 emergency situation.

15 Q. Okay. You are paying the
16 interruptibles a monthly demand discount, and the rest
17 of the value of the interruptibles to the system is
18 rolled into the energy credit, and you will never have
19 to pay then up to the amount of interruptibles you have
20 contracted more than 10 cents a kilowatthour hour for
21 emergency relief; is that fair?

22 A. If I understood your question
23 correctly, we pay the interruptibles 10 cents a
24 kilowatthour on the estimated relief they provide us
25 for. It's never more, it's never less. It's 10 cents

1 a kilowatthour.

2 Q. Right. But if purchases are, from
3 an interconnected utility, for example, it would be
4 cheaper in an emergency situation, less than 10 cents a
5 kilowatthour, you would opt for the purchases?

6 A. Yes.

7 Q. So, the 10 cents is, in effect, a cap
8 on what you are going to have to pay up to the number
9 of interruptibles that you have for emergency power?

10 A. Yes. It provides an indicator in
11 that sense in terms of what is economic to consider in
12 terms -- in an emergency situation, that's right.

13 Q. There is no reason why dispatch
14 evaluation has to be tied to the rate structure, is
15 there? You could have one criteria for dispatch of
16 interruptibles and still have a rate structure that
17 doesn't reflect that precise criteria; isn't that so?

18 A. I assume you could. Like I said,
19 this approach is taken because it dispatches in this
20 context the most economic resource available.

21 Q. I asked the question because on page
22 16, the third last paragraph, we are told that there
23 are at least two kinds of customers. Some customers
24 prefer their savings up front. In fact, this paper
25 says that the majority of Ontario-based customers would

1 prefer that, which would be a higher demand discount
2 and a lower energy credit.

3 [3:24 p.m.] But as you have said a few minutes ago,
4 there are, of course, customers who would prefer to
5 match their electricity savings with periods of revenue
6 loss because of the interruption.

7 So, there is more than one aim of
8 interruptible customers. They fall into more than one
9 category in terms of what rate structure would best
10 serve them; is that fair?

11 A. Yes, I think it is.

12 Q. And if you didn't tie the setting of
13 the energy credit to the dispatch model, you could
14 offer a spectrum of interruptible rates. You could
15 offer one with a 10 cent per kilowatthour energy credit
16 and you could offer one with a 1.96 cent per
17 kilowatthour energy credit and you could offer probably
18 a number of options in between.

19 Wouldn't that increase customer
20 satisfaction and the level of interruptibles that the
21 system is able to contract?

22 A. Yes, it would. I think you would
23 have to take some care if you did that in terms of how
24 you allowed customers to move back and forth between
25 the options because a customer's perception of a value

1 of a certain option is going to depend on how
2 frequently or how often he thinks he is going to get
3 cut during a year.

4 If you think of him being in for a 5-year
5 period, if that perception starts to change, and
6 probably most customers' perceptions would change in
7 the same direction, you would want to make sure that
8 customers weren't all moving to one particular option
9 which was going to end up costing the system more.

10 This is struck on an average basis. I
11 think as long as everybody is in at one point on the
12 average, you are fine. If you find that the system is
13 starting to move away from the average and you allow
14 everybody to move to one particular option, then I
15 think I would be concerned about in the end actually
16 paying out more than our total avoided cost.

17 Q. Well, there are customers for whom
18 the 10 cent energy credit is ideal. That is why you
19 have adopted it, I assume; is that right?

20 A. There are customers for whom the 10
21 cent energy credit is preferable, yes.

22 Q. It is preferable. And there are
23 customers for whom a 1.96 cent energy credit would be
24 preferable and they won't opt for DDS because they are
25 not getting their money up front.

1 A. I don't know if they won't opt for
2 DDS. In total, they may prefer one to the other. They
3 may find that the options we are offering are
4 preferable to being a firm customer.

5 So I must admit since going out in the
6 field and offering this particular rate form to
7 customers, we haven't received any feedback from
8 customers that, gee whiz, we really liked it more the
9 old way when you were paying it all on the discount and
10 not on the energy credit and why don't you go back and
11 offer that as well. We haven't received any comments
12 from customers to that extent.

13 Q. Have you solicited comments to that
14 extent? Have you done a survey of what customers would
15 prefer?

16 A. No, we haven't, but in terms of going
17 to the service, we have been actually actively out and
18 speaking to each of the customers individually and
19 transferring them over from the old process to the new
20 process in terms of explaining the terms and conditions
21 to them and new rates to them. So there has been
22 direct contact with each of the customers.

23 Q. Do you not think that if you offered
24 more than one rate structure, you would get more
25 interruptibles?

1 A. Theoretically, you might, yes.

2 Q. Hydro is not considering offering
3 more than one DDS rate structure; is that right?

4 A. Not at this particular point in time,
5 no. I think as I said, we have been mainly working on
6 getting customers transferred over to, one, not only
7 the new rate structure, but making sure they understand
8 the new terms and conditions. We expanded our
9 definition of winter and expanded the number of hours
10 we can cut them for in both the winter and the summer.

11 And that, from talking to the customers
12 is probably the more important thing to make sure they
13 understand because those are the terms and conditions
14 they have to follow within the contract.

15 I think perhaps once we get all the
16 customers moved over, we can look at finetuning this
17 particular offering, but it is not something that we
18 are doing any work on at this particular point in time.

19 Q. Well, if you had come out, for
20 instance, with two options, could you not have saved
21 money by explaining to the customers both options at
22 the same time and asking them to make their choice and
23 maybe gotten more customers along the way? Is that
24 something that Hydro considered doing?

25 A. No, we didn't consider doing it. We

1 have three options we are offering customers at this
2 particular point in time as it is.

3 What we have been talking here, if you
4 will notice on page 16, is really just option No. 1.
5 There are three options in total. And I guess part of
6 our concern was both from our own internal
7 administrative purposes and talking to the customers to
8 make sure we didn't have a plethora of options and
9 overly confuse the issue to begin with.

10 Q. All three of those options set the
11 energy credit at 10 cents a kilowatthour?

12 A. Yes, that is correct.

13 Q. So none of your options would involve
14 any other energy credit that might satisfy customers
15 more as you have indicated in that paragraph, third
16 from the bottom on page 16. There are different
17 customers with different requirements.

18 A. Yes.

19 Q. Okay. Thank you. I have one more
20 question on DDS, one more area.

21 I assume that the 10 per cent preference
22 premium that covers all of these benefits of
23 alternatives to new supply is also part and parcel of
24 the DDS evaluation in rate structure; is that right?

25 A. No, it is not. It was not included

1 when we did the evaluation of the discount demand
2 service rates. So, when we say it is based roughly on
3 90 per cent of avoided cost, that is the avoided cost
4 without the preference premium.

5 Q. Is DDS not a preferred option to
6 building additional capacity?

7 A. I view it is, yes.

8 Q. But the 10 per cent preference for
9 identifying and harvesting options that are better than
10 building capacity wasn't applied in the DDS analysis?

11 A. No, it was not.

12 Q. Was there a reason for that?

13 A. I guess the main reason in my mind is
14 the fact that we are paying 90 per cent of avoided
15 costs as it is, so we are pretty close up to the full
16 avoided cost.

17 In terms of structuring this program, I
18 think I raised this point when I was talking with Mr.
19 Rodger from AMPCO, was to try and make sure that not
20 only were we paying in line with avoided cost, but that
21 it was a program that would benefit both the
22 interruptible customers and the firm customers on the
23 system.

24 And since it is the straight avoided cost
25 that is reflective of what is the actual cost that

1 those customers pay, paying 90 per cent of that still
2 means that they are better off.

3 If you were to pay 90 per cent with the
4 premium, you would essentially be paying 100 per cent
5 and they would be breaking even.

6 So, I don't know, if somebody had come to
7 me and said you should use the premium cost, I might
8 have said, well, in that case, maybe it should be 80/85
9 per cent. But I think we had that other objective in
10 mind as well in terms of making sure that not only
11 these customers received a benefit but also the other
12 customers in the program received -- the other
13 customers on the system, excuse me, the firm customers,
14 received a benefit as well.

15 Q. Let me just clarify something here.
16 You are referring to paying 90 per cent of avoided
17 costs and I understand that page Roman numeral 2 of the
18 executive summary, Item 3, in fact, says that 10 per
19 cent of the value of the interruptible loads is held
20 back, it is not paid out, in DDS rates. There are
21 three reasons given for that. One of them is one you
22 just alluded to, to provide some benefit to firm
23 customers.

24 First of all, I guess I want to confirm,
25 I am reading benefit to firm customers to mean

1 financial benefit.

2 A. Yes, rates that are lower.

3 Q. I guess I am having trouble
4 understanding why firm customers should get a financial
5 benefit at the expense of the DDS participants when
6 they are, in fact, not incurring any of the risks or
7 the obligations.

8 A. I guess from my perspective for those
9 firm customers, one, the program is an optional
10 program. The interruptible customers, they can choose
11 to participate or not choose to participate. But I
12 think it is pretty clear, given the terms and
13 conditions we have right now, not all customers can
14 participate.

15 If you have to bring a minimum of 2-1/2
16 megawatts of relief to the system, I think clearly,
17 small residential and commercial customers can't
18 participate.

19 So to that extent, they are saying, I
20 have absolutely no opportunity to participate in the
21 program. What is the benefit of Hydro offering that
22 from my perspective? The benefit is that Hydro does
23 not have to build capacity it would otherwise have to
24 put in place to meet those interruptible loads.

25 Q. And that is a benefit to the

1 customer --

2 A. Yes, but then you say, we are paying
3 out the majority of that benefit to those interruptible
4 customers. And if you are to pay 100 per cent of it
5 out, then those customers, they would be indifferent,
6 except for as we noted here, the administration costs
7 and other costs involved in the program.

8 Q. So, you think that by paying out the
9 full 100 per cent, you wouldn't get more DDS than you
10 have now, as opposed to paying out the 90 per cent?

11 A. I think conceptually, you might get
12 more. I don't think the change in the numbers would
13 get you a material amount of it, additional response.

14 This is something we had some discussion
15 with at the OEB when we were talking about it, when we
16 were talking about actually implementing the particular
17 rate structure.

18 Q. Do you have any analysis of that?

19 A. No, we don't.

20 Q. Is this some version of the no-losers
21 test that Ontario Hydro is supposed to have abandoned
22 for program purposes, making sure that non-participants
23 get some benefit?

24 A. I guess from a rate perspective, yes.

25 Q. So that test hasn't been abandoned in

1 the case of DDS, has it?

2 A. Well, I think the difference is not
3 that great between paying out 90 per cent and 100 per
4 cent. Paying out 90 per cent of avoided cost, we are
5 probably paying out substantially more than we are in
6 virtually any of the other demand management programs.

7 Q. But there has been no analysis on
8 that. You told us that. It is your opinion that it
9 wouldn't make a big difference.

10 A. That's right.

11 Q. There is another reason given for
12 holding back 10 per cent. You say that you hold back
13 10 per cent in part to cover uncertainties in the
14 derivation of avoided costs.

15 I am not familiar with this point in any
16 other demand management program. Is this the only
17 place that money is held back, to cover uncertainties
18 in the derivation of avoided cost?

19 A. I am not too sure where else it is
20 held back and I think there may be an issue in terms of
21 how closely you are approximating avoided costs. If
22 you are only paying out 50 per cent of avoided costs,
23 it may not be an issue.

24 There are two points here I would like to
25 raise: One is that in working out what the fueling

1 costs were, we were essentially trying to work out what
2 would be the natural gas costs involved in fueling this
3 natural gas-fired CTU. Now, essentially, we haven't
4 got any commitments for natural gas or any contracts
5 for natural gas, so there is some uncertainty involved
6 in terms of what those prices are.

7 The other point is, is we are actually
8 setting a rate here, a rate that you are going to be
9 charging customers. And rates are something that you
10 like to see some sort of element of stability from year
11 to year.

12 I think even over the course of the two
13 years that we have been looking at this, the avoided
14 costs changed slightly between how we finalized our
15 1991 rates and how we went to develop our 1992 rates,
16 to the extent that whereby actually, just holding our
17 rates at the 1991 levels, we will now be paying out
18 probably 92 per cent of avoided costs in 1992.

19 So, if we had marched on 100 per cent
20 exactly in 1991, we probably actually would have to
21 drop those rates a little bit in 1992 in order to stay
22 within the avoided cost ceiling which, in my mind, we
23 would be giving the wrong signals to customers.

24 Leaving that little bit of head room allows us some
25 flexibility if the avoided cost that we used to

1 evaluate and calculate the rate change a bit from year
2 to year.

3 This is precisely the problem I was
4 talking about in my direct when I was talking about
5 using marginal cost to set rates in the sense that they
6 tend to be rather volatile from one year to the next.
7 And if you are trying to set rates which you want to
8 have some element of stability to, you have got a
9 conflict there.

10 Q. And what if avoided cost is too low?
11 You are not compensating for that. You are just
12 compensating if avoided cost is too high, right? You
13 are holding some back. But you could err on either
14 side; isn't that right?

15 A. Yes, the avoided costs could go up.
16 I think the problem is, from the customer's perspective
17 in terms of the signals you are telling him through the
18 rate, there is probably a lot of difference between
19 increasing the rate a year after you have introduced
20 this new rate form and actually dropping the rate a
21 year after you have introduced this new rate form. You
22 introduced a new rate form, you convince them all to
23 sign up and you turn around ten months later and you
24 drop the rate on them, they say, "Well, what are you
25 doing to us?"

1 Q. Well, we have heard that you don't
2 apply the 10 per cent preference premium to this. And
3 further, you now cut back - you hold 10 per cent back
4 and part of it has to do with avoided cost uncertainty.
5 And yet you have said this is a preferred option.

6 So, wouldn't an option be to not worry so
7 much about cutting the rates back a cent or two and
8 just set them at avoided cost? You are not even adding
9 the 10 per cent and leave them there.

10 MR. WILSON: A. Could I offer sort of a
11 comment on this?

12 The size of sort of the share the
13 participating customer gets on DDS rates is akin to an
14 incentive given to a customer on one of the demand
15 management programs.

16 We have already testified that we don't
17 pay 100 per cent of avoided cost as incentives. In
18 fact, I guess the DDS program participants get a bigger
19 incentive as a fraction of the avoided cost than any of
20 the other programs participants, so it is probably the
21 most generous program in the current portfolio.

22 You asked a question about the 10 per
23 cent premium matter and I guess Mr. Harper wasn't
24 thinking of this aspect of it, but we don't offer that
25 incentive -- oh, pardon me, we don't calculate that

1 adder and apply it to load shifting programs. We are
2 simply - we are shifting energy consumption from one
3 time to another where there is some saving on energy.

4 I believe that DDS customers, when they
5 are interrupted for a few hours, don't go to their
6 order book and tear up the orders and say, well, I
7 guess we can't make that steel or those shoes, or
8 whatever it is they do. They make them up on another
9 shift and they consume the energy later. So, it is
10 very much akin to the load shifting and it is quite a
11 consistent treatment.

12 MR. MONDROW: I am sorry, I have run a
13 bit late. Perhaps we should take the break, Mr.
14 Chairman.

15 THE CHAIRMAN: Okay, break for fifteen
16 minutes.

17 THE REGISTRAR: The hearing will take a
18 15 minute recess.

19 ---Recess at 3:40 p.m.

20 ---On resuming at 3:57 p.m.

21 THE REGISTRAR: This hearing is again in
22 session. Please come to order.

23 THE CHAIRMAN: Mr. Mondrow?

24 MR. MONDROW: Thank you, Mr. Chairman.

25 Q. Mr. Burke, I have one question about

1 something you said earlier. You said that my
2 hypotheticals were unrealistic because the avoided cost
3 was greater than the savings; is that right?

4 MR. BURKE: A. Yes, it struck me that
5 way, because I expected that you were looking at a
6 stream of saved energy and a stream of saved supplied
7 energy, and the avoided cost per kilowatthours is
8 typically anything slightly lower than the rate at this
9 point in time.

10 Q. If you target an option, an
11 efficiency option at winter peak, wouldn't the avoided
12 costs for that option be greater than the savings?

13 A. Well, there are some measures that
14 have low load factors, like space heating measures,
15 that where when you save energy, you save it perhaps
16 for 30 per cent of the year, and the effect is that the
17 avoided cost is about 6 or 7 cents a kilowatthour. So
18 in those circumstances you can end up in a situation
19 where the avoided cost exceeds the rate, and that's
20 what I said, you would have to have some pretty unusual
21 load factors in order to end up in that situation.

22 You picked industrial customers, I
23 believe, which tend to have very high load factors.
24 And so if you put a piece of equipment in place that
25 saves energy, it usually saves it for 80 per cent of

1 the year, and so you would actually have rates lower
2 than the average. The avoided cost for an industrial
3 load would actually be lower than the average avoided
4 cost for the system.

5 So, that was why I said it would be in a
6 very unusual circumstance where you would have a low
7 load factor industrial load that you were saving in the
8 winter. That would make it possible but it's -- well,
9 it's unlikely in the EEI case.

10 Q. In the industrial sector.

11 A. In the industrial sector.

12 Q. Okay, thank you.

13 Let's talk about load shifting for a
14 couple minutes. Perhaps, Mr. Shalaby, this is a
15 question for you, I'm not sure.

16 There is a maximum amount of load
17 shifting that is useful to the system; is that right?
18 You can shift load until you can get it flat,
19 relatively flat.

20 MR. SHALABY: A. Yes.

21 Q. And the optimum amount of load
22 shifting is termed in Ontario Hydro's documents, "The
23 Useful Potential," is that right? Just so I can use
24 the term properly.

25 A. You can use the term.

1 Q. Thank you.

2 If you turn up Exhibit 25 at page E2,
3 which is Appendix E, page 2 --

4 A. Could you repeat the page, please?

5 Q. Appendix E, page No. 2. I would just
6 ask you to open it for reference. There is a sample
7 calculation that is done there. If I understand the
8 calculation correctly, I'm just going to run through it
9 very quickly, you start with a spread between daytime
10 peak and nighttime trough, you subtract from that the
11 available peaking hydraulic, and then you further
12 subtract the interruptibles, and you are left with the
13 useful potential; is that right?

14 A. For the high day, that is the
15 situation, yes.

16 Q. I just spoke with Mr. Harper before
17 the break about interruptibles, and my impression was
18 that interruptibles are primarily an emergency
19 situation measure, as opposed to load shifting, which
20 is something you want to permanently, to the extent
21 possible, remould the load shape and get flatter loads
22 all the time. I guess I'm wondering why you net out
23 interruptibles when you determine what your potential
24 load shifting is.

25 A. Well, we recognize that we do have a

1 certain amount of interruptible contracts, if you
2 didn't net them out, you may be instituting programs
3 that would get the same benefit two different ways.
4 Only one is enough.

5 Q. But the interruptibles aren't an
6 option that is supposed to be used every day or every
7 winter day.

8 A. They are not.

9 Q. Whereas load shifting is an option or
10 more accurately a description of a number of options
11 that are meant to be put in place permanently and
12 operate every day on a regular basis; is that right?

13 A. That is right. And the netting out
14 of interruptibles is only done in the high days. If
15 you look at the page E3, it shows that we net out
16 interruptibles only in the high days, not every day of
17 the year. The mid days and the low days do not have
18 the interruptibles netted out.

19 Q. Does that calculation then assume
20 that interruptibles will be used on every high day to
21 flatten out the load shape?

22 A. In this calculation, it is assuming
23 that.

24 Q. And in reality, Mr. Harper, is that
25 how interruptibles will be used, every high day, to

1 flatten out the load?

2 MR. HARPER: A. I think it depends on
3 how you are defining your high day.

4 Q. I'm asking you, it's your definition.

5 MR. SHALABY: A. Maybe we could stick to
6 the definition here. I think it is the highest five
7 days in a month or something close to that. I can get
8 the details for you. But in answer to you, no, I don't
9 think interruptibles are interrupted in every high day
10 in every month. That is not the case.

11 Q. The load shifting that you want to
12 accomplish, you don't just want to accomplish it for
13 those five days, you want to accomplish it over a
14 broader range of days; is that right?

15 A. Yes.

16 Q. And yet you net out the
17 interruptibles from the calculation all together. I
18 guess I'm just having a problem reconciling the
19 function of the two options, load shifting on the one
20 hand and interruptibles on the other, and why you net
21 out emergency response from something that is going to
22 be a permanent intervention. Can you reconcile that
23 for me?

24 A. Well, it's in recognition that on
25 high days you have an added measure that can help you

1 meet demand. And we want to take account of that added
2 measure. If needed, we will have an added measure in
3 reserve.

4 Now, the net impact of all that, if you
5 didn't include the interruptibles, is that the
6 potential for load shifting would be slightly higher,
7 and the numbers in Table 1 on page 83 would show what
8 the potential is on medium day and low days. So, the
9 potential would increase by something like 300
10 megawatts or so.

11 Q. And would that be preferable?

12 A. Increasing the potential is not
13 something that is preferable or not preferable. It is
14 just that if you don't want to count the interruptibles
15 as an instrument you can use on high days, you want to
16 shift the load sufficiently that you don't even need to
17 interrupt anybody, there would be an added potential to
18 do so.

19 If you want to continue to count the
20 interruptibles, whether it is because they are more
21 effective or have higher degree of customer
22 satisfaction, or they work together with load shifting.
23 And that's the way we are doing it this time. We are
24 counting both load shifting and interruptibles at the
25 same time.

1 Q. Okay. I would like to ask a question
2 about another area. If more load shifting were useful
3 to the system, could Ontario Hydro get it? Is there a
4 problem with getting more load shifting?

5 A. I don't know that we estimated sort
6 of the maximum potential for load shifting, but I think
7 our estimate is that there is probably more load
8 shifting out there than we can use effectively.

9 Q. Okay.

10 A. Will there be a problem getting it?
11 Well, it's going to be work getting it.

12 Q. When Ontario Hydro evaluates energy
13 efficient options, the focus is on winter peak
14 reductions; right?

15 A. When Ontario Hydro?

16 Q. Evaluates EEI options.

17 A. Well, we look at total customer
18 savings, whether they occur in the winter or in the
19 summer. But because we are a winter peaking utility,
20 we naturally go to winter peaking savings as a start.
21 That has been a start for us. But as you have heard
22 the Panel show, that we are looking at cooling options
23 as well.

24 Q. Yes. If we go a step further in our
25 load remoulding attempt, if we could get load

1 reductions off peak because of efficiency options, and
2 thereby increase the spread between peak and trough,
3 more load shifting would be useful in that case; right?

4 A. Conceptually, yes. But of less value
5 though.

6 Q. But of less value than the load
7 shifting that we are after now, that thousand
8 megawatts.

9 A. You have got to work on reducing the
10 trough and work on dumping from the peak to the trough.
11 It may be easier just to shave the peak.

12 Q. But if we have a flat load at one
13 level because of load shifting, and then we enter
14 another scenario where we have a deeper trough, and so
15 we also get a flat load, but it is at a slightly lower
16 level, don't we avoid more capacity then in the first
17 scenario?

18 A. Yes, the lower the level of load, the
19 less capacity you need.

20 Q. And following this reason then,
21 shouldn't options that can -- that do target
22 specifically off-peak load reduction be credited with a
23 portion of avoided capacity costs?

24 A. Through what? Is there a second
25 stage you are looking at? If you reduce off peak and

1 then load shift, is that what you are saying?

2 Q. That's right.

3 A. I haven't thought of it that way
4 before.

5 Q. Okay. Panel, would you say it's true
6 that Ontario Hydro is under significant cost pressures,
7 generally speaking?

8 MR. WILSON: A. Such enthusiasm.

9 Sure, yes.

10 Q. You would say that's true?

11 A. Yes.

12 Q. Thank you. Demand management, to the
13 extent that it is successful, reduces revenues to
14 Ontario Hydro; isn't that right?

15 A. Yes, it does.

16 Q. Would this exacerbate the cost
17 pressures that Ontario Hydro is under?

18 A. Excuse me, let me add that I think it
19 reduces revenues in short run. Clearly the money we
20 spend on demand management has to come ultimately from
21 customers, so that the revenues are collected for
22 demand management. So that to the extent that revenues
23 are reduced, it is because less electricity was used.

24 Q. Right.

25 A. Right.

1 Q. And you are saying that that is a
2 short-run reduction.

3 A. There is upper pressure and rates on
4 the short run, and possibly on the long run as well.
5 But the overall cost of service is down, is lowered.

6 Q. So, you would get an exacerbation of
7 the cost pressures that the corporation is under.

8 A. Yes, for certain in the short run.

9 Q. Ms. Fraser, has the energy management
10 branch felt any of these conflicting tensions within
11 Ontario Hydro? Has it influenced your operations at
12 all, or have you had to deal with it in any way?

13 MS. FRASER: A. The conflicting tension
14 with respect to the rate impact of demand management
15 expenditures?

16 Q. Well, the conflicting tension that on
17 the one hand we have existing now significant cost
18 pressures. On the other hand, the more demand
19 management we get, the further exacerbated those cost
20 pressures become.

21 A. Well, it certainly was always made
22 clear to me that we are supposed to spend any money
23 wisely. It comes from the customers. It is not an
24 infinite pot. That is just a general rule of doing
25 business.

1 With respect to the resources that we
2 have been able to make the case for what we are going
3 to be able to do and the time frame, what's reasonable
4 as we move from where we were, say, three or four years
5 ago to where we are now, we have been able to make the
6 case for the resources that we have needed, and those
7 resources have been forthcoming. Relative to other
8 parts of the organization, the increases have been
9 dramatic, where other parts of the organization have
10 been looking at, in some cases, absolute reductions.

11 Q. Do you think that this relatively
12 large resource allocation is -- are you telling me that
13 that is an indication of where Hydro's sentiments lie,
14 in terms of demand management?

15 A. Certainly the direction that I get is
16 the sentiments are that demand management is top
17 priority, and that we are supposed to go out and get
18 all the economic demand management we can. And to the
19 best of our ability, as fast as we can mobilize all the
20 allies that we have talked about, all of the resources
21 in the marketplace, move the market, get new products
22 in and those -- those are the constraints that are
23 probably a bit more pressing than, you know,
24 availability of resources from demand management's
25 point of view.

1 Q. And the fact that the more demand
2 management you get, the tougher it will be in the next
3 couple of years for Ontario Hydro to keep its financial
4 picture healthy hasn't impacted at all on demand
5 management in the energy branch?

6 A. No one has told me, sorry, you can't
7 do program X, Y and Z, because it is going to have such
8 and such an impact on rates. Certainly no one has ever
9 said that to me. The fact that more programs we come
10 up with and could do...

11 Q. Is there a general feeling then in
12 Hydro that short-term pain for long-term gain is an
13 appropriate salve?

14 A. Well, if by that you mean short-term
15 rate increases for long-term lower costs of energy
16 service in the province, that's definitely the basis on
17 which we are working.

18 MR. MONDROW: Those are all of my
19 questions, Mr. Chairman.

20 Thank you, Panel.

21 [4:15 p.m.] THE CHAIRMAN: Ms. Kleer, are you ready
22 to go?

23 MS. KLEER: I guess I expected to have an
24 hour...

25 THE CHAIRMAN: Well, if we don't get

1 done, we will finish tomorrow morning, but we can at
2 least start now.

3 MR. B. CAMPBELL: Mr. Chairman, just
4 before Ms. Kleer does commence, there is, I guess, two
5 matters I should record.

6 One is that I have had a couple of
7 conversations with Mr. Martin Campbell on behalf of
8 OPHA, and he had indicated to me that he intended to
9 cross-examine with respect to a description of certain
10 kinds of health related work such as epidemiological
11 studies that were generally done by Ontario Hydro.
12 This was part of an overall interrogatory that got
13 slotted into Panel 4, and he was interested in
14 epidemiological work being conducted by Ontario Hydro.

15 Having discussed that matter with him, I
16 have reached an arrangement with him whereby his
17 question about 'please provide a description about what
18 epidemiological work is being referred to', is going to
19 be treated as a supplementary interrogatory. I pointed
20 out that that was sort of a part of a very broad
21 question and that there would be nobody on this panel
22 who could deal with that matter.

23 So, we are dealing with it that way and
24 he has asked me to advise you that that's satisfactory
25 to him, and the short number of questions that he had

1 about that matter would now not be necessary for this
2 panel.

3 Secondly, I can advise --

4 THE CHAIRMAN: When do you, if ever,
5 expect there to be some evidence in that area, in the
6 proponent's case?

7 MR. B. CAMPBELL: I think it will be in
8 the course of some of the options panels where it's
9 particularly relevant. I think certainly in the fossil
10 and nuclear area, less so in the hydraulic.

11 I can tell the Board that there clearly
12 have been a range of interrogatories on these matters
13 and in this area, possibly in another area, where there
14 is an exercise going together to try and kind of pull
15 together some of the interrogatory information. These
16 things sometimes start out in the course of looking at
17 trying to get material ready for the witnesses and in
18 this case, I think in this area, it may be one of the
19 areas where, having pulled it together, we decided to
20 package it up and provide it in a concise sort of
21 overall way and then it could be spoken to somewhat
22 more easily than wading through interrogatories.

23 So, the health and environmental is one
24 area where we are looking at the possibility of
25 packages in that respect.

1 I expect that another area where we will
2 be doing that for Panel 8 is alternative electricity
3 generating technologies. I expect there will be a
4 document available two to three weeks on that, on that
5 matter, which basically has done the same thing, which
6 is pull together that kind of matter. And as pointed
7 out in our Panel 5 witness statement, that will be
8 spoken to in Panel 8.

9 MR. D. POCH: Perhaps Mr. Campbell could
10 just indicate when the health and environment
11 documentation will likely be available. It's obviously
12 of interest of us, both for cross and for preparation
13 of our cases.

14 MR. B. CAMPBELL: I think we are hoping
15 that the -- I don't have quite as tight a grip on this
16 information as I would like to respond to all of these
17 questions, but I think the first one is intended to be
18 compiled in respect of hydraulic matters, and with any
19 luck should be available, as I understand it from Ms.
20 Harvie, by the end of next week. It is, as I say, it's
21 having taken a look at the result of an exercise that
22 we put together for our own purposes, and we, I think,
23 concluded, at least insofar as it's far enough along
24 now, that we can reach a conclusion, that it might be
25 of assistance generally to the hearing and it just

1 might facilitate things, the discussion of some of
2 these issues.

3 My understanding is that, again,
4 information that's been put out in interrogatories is
5 also being gathered then for the subsequent option
6 panels, and my expectation is that there will then be
7 an equivalent package sort of compiling all of this
8 information for subsequent option panels as we proceed.

9 Oh, the second matter I wanted to talk to
10 you about was simply to record the fact that we were
11 given today by Ms. Kleer the list of materials that she
12 will be referring to in her cross-examination. I am
13 not sure that the panel even has them yet.

14 MS. FRASER: Just.

15 MR. B. CAMPBELL: If they did, they were
16 handed them at the break, but they have not had an
17 opportunity to review them. I don't know whether that
18 makes any difference in light of the time to how the
19 Board wants to proceed. It may make a difference as to
20 how efficiently the panel can proceed is my concern.

21 MS. KLEER: On that point, I think most
22 of the interrogatories I will be referring to, I may
23 get to them today. But if not, I could get them
24 tomorrow. They are actually quite brief so it should
25 not take...

1 THE CHAIRMAN: Why don't we get started
2 with you and then we will stop around five o'clock.

3 MS. KLEER: If I may I would like to
4 begin by filing as a new exhibit a short position paper
5 that was put out for discussion by Moose River/James
6 Bay Coalition, and I don't intend to cross-examine on
7 it; I merely put it forward as my client's position,
8 the Moose River/James Bay Coalition, that is, with
9 respect to energy conservation. It's a very short
10 position paper that my client will be addressing in
11 their own evidence.

12 THE CHAIRMAN: That will be No. 313.

13 THE CHAIRMAN: 313.

14 ---EXHIBIT NO. 313: Position Paper, Moose River/James
15 Bay Coalition.

16 THE CHAIRMAN: Just to make sure, Ms.
17 Kleer, you are examining on behalf of the Moose
18 River/James Bay Coalition group?

19 MS. KLEER: As well as Nishnawbe-Aski
20 Nation, Treaty #3, Teme-Augama Anishnabai.

21 THE CHAIRMAN: And this position paper
22 represents the views of all three?

23 MS. KLEER: The Moose River/James Bay
24 Coaliton.

25 THE CHAIRMAN: Thank you.

1 MS. KLEER: In fact, just for a bit of
2 further background on it, that paper was distributed to
3 the aboriginal intervenors in this hearing, as well as
4 to other environmental groups, so they are all aware of
5 it and it's the subject of some discussion. I just
6 merely put that on the record so that people are aware
7 of what this paper is about.

8 I will also distribute the eight copies
9 of the interrogatories I intend to refer to.

10 As I say, panel members, I will not be
11 referring to that. You may read this at your leisure.

12 CROSS-EXAMINATION BY MS. KLEER:

13 Q. I guess my first question will be
14 directed to -- and I apologize, but I don't know
15 everyone who is on the panel. The third individual,
16 sir?

17 MR. WILSON: A. I am Doug Wilson.

18 Q. Hello, Mr. Wilson.

19 It became clear during the course of the
20 cross-examination by IPPSO... Thank you. I just was
21 given a road map to the names of you people.

22 It became clear that there is no
23 preference premium that is applied either to load
24 shifting or to discount demand services; is that
25 correct?

1 A. Yes, that's right.

2 Q. Now, I am a bit puzzled by that, to
3 be honest. My understanding is that there a preference
4 premium that is applied to EEI; is that correct?

5 A. Yes.

6 Q. And as well to hydraulic; is that
7 correct?

8 A. Yes.

9 Q. Now, my understanding of why the
10 preference premium is applied is in large part to give
11 some meaning to the environmental preferences for the
12 options. Is it the case that with respect to capacity
13 interruptible load or what you now call discount demand
14 services and load shifting, that these are not somehow
15 environmentally preferable?

16 A. To date we have treated them as
17 distinct from measures which basically avoid the
18 consumption of energy, or in the case of hydraulic,
19 produce energy with environmental effects that are
20 noticeably less now than either nuclear power or
21 burning fossil fuels.

22 Perhaps Mr. Shalaby can elaborate, if he
23 wishes.

24 Q. Mr. Shalaby?

25 MR. SHALABY: A. Yes, in the whole that

1 is the rationale for the premium. I think we discussed
2 it at length in Panel 3. But it is what you said, it's
3 to give substance to the preference for certain
4 resources that Hydro indicated in its strategy that it
5 gives preference to.

6 Q. But in fact, with respect to both
7 load shifting and discount demand services, they
8 clearly push back the need for new supply and therefore
9 they would be, in some senses, environmentally
10 preferable as well; is that not the case?

11 A. They have some environmental impact
12 in the sense of reducing supply, but not as much as
13 environmental -- as EEI, because they don't have as
14 much energy reduction impact as other options do.

15 So yes, they do have some impact but
16 nowhere near the high load factor EEIs.

17 Q. So, do I take it that the fact that
18 you apply a 10 per cent preference to hydraulic and not
19 to capacity interruptible load and load shifting means
20 that somehow developing hydraulic is more preferable
21 than developing load shifting and capacity
22 interruptible load?

23 A. Developing hydraulic as a renewable
24 resource, we said in our strategy that we will pursue
25 renewable Ontario resources. Hydraulic gets a

1 preference for being renewable and gets a preference
2 for being an Ontario resource.

3 Q. I appreciate that. What I am asking
4 is, are you saying by applying a 10 per cent preference
5 premium to hydraulic as opposed to capacity
6 interruptible load and load shifting, that hydraulic is
7 preferable, developing hydraulic is preferable to
8 capacity interruptible load and load shifting?

9 A. No, I am not saying that.

10 I am saying that we give preference to
11 demand management and we give preference to renewable
12 Ontario resources.

13 In the family of demand management,
14 interruptible loads and load shifting did not get the
15 same treatment in terms of the 10 per cent premium
16 adder as the efficiency options did.

17 Now, I am not sure that they needed that
18 to be fully implemented. In my judgment, the 10 per
19 cent premium on those options is not a significant
20 omission in their implementation. It doesn't detract
21 very much from the attainment of their full potential.

22 We fully intend to get the full potential
23 of load shifting. And if we do need to add the 10 per
24 cent to get the full potential, that might be a
25 consideration in the future.

1 It's really a theoretical kind of
2 consideration, because we expect to get the full
3 potential without the premium.

4 Q. Well, I understand from load shifting
5 that there is a potential out there of 1200 megawatts,
6 but in fact your target for 2000 is 1000 megawatts; is
7 that correct?

8 A. That is correct, yes.

9 Q. So, by applying a 10 per cent
10 preference premium you wouldn't be geting more than
11 your 1000 megawatts?

12 A. The reason for going slightly below
13 the opportunity, the system opportunity, as I described
14 in my direct evidence, is the uncertainties associated
15 with the thermal load curve with the impact of
16 different rate structures on the load shapes. There
17 are many uncertainties associated with exactly how you
18 level off demand, so we thought targeting a thousand
19 out of a useful 1200 is a prudent thing to target for.
20 [4:29 p.m.] We target for a thousand and see where we
21 are at that time.

22 Q. Have you done any studies to say that
23 that 200 megawatt difference between 1200 and 1,000 is
24 necessary to deal with the uncertainties that you are
25 talking about, or is that just a ballpark figure that

1 you have chosen?

2 A. It is a judgment call.

3 Q. And just so I am clear on this point
4 in my own mind, are load shifting and capacity
5 interruptible load both screened against avoided costs?

6 A. As Mr. Harper just indicated in the
7 last bit of cross-examination, the amount of discounts
8 given for interruptibles is linked to avoided cost,
9 yes.

10 Q. Thank you. Mr. Harper, you spoke
11 when you were being cross-examined by Mr. Rodger about
12 your time-of-use rate experiment experiment with 500
13 residences to see what could be done in terms of
14 residential load shifting. And I believe your
15 preliminary results showed a 5 per cent shift to
16 off-peak hours was possible in residential, at least in
17 that test group; is that correct?

18 MR. HARPER: A. Yes. It was estimated
19 that you could get a 5 per cent shift from, say, the
20 winter peak period to the winter off-peak period.

21 Q. Now, if you are exploring that
22 option, ie. residential load shifting, how does that
23 affect your 1,000 megawatt target?

24 A. I think as I outlined in my direct,
25 if we look at the total load shifting that we think

1 could be achieved if you were to apply time-of-use
2 rates to all customers in the province, you would get
3 something in excess of the 1,000 megawatt target.

4 So, that you really don't have to apply
5 it and really then, it is a matter of where is it
6 economic to to apply it so that in total you get up to
7 1,000 megawatts that we are looking for?

8 Q. Can we turn briefly to Exhibit 25 and
9 I will ask these questions to you, Mr. Harper. And
10 Exhibit 25 is the demand management in the 1989
11 Demand/Supply Plan, and if we can turn to page 39.

12 Under 3.2, there is a description there
13 of the useful potential and the statement is made in
14 the first paragraph, I believe -- oh, pardon me, in the
15 second paragraph, that the availability of hydraulic
16 generation reduces the usefulness of other load
17 shifting. Load shifting is only useful if it flattens
18 the thermal load curve, not just total load.

19 Now, has Ontario Hydro ever considered
20 modelling the potential for load shifting as though
21 some of the now available hydraulic generation were, in
22 fact, not available and, in fact, you decommission some
23 of the existing hydraulic plants? Has that ever been
24 done?

25 MR. SHALABY: A. I don't think we have

1 done that in any detailed way, but if you want to get
2 an idea about that, you just subtract the amount of
3 peak hydraulic or add that amount of peaking hydraulic
4 to the useful potential for load shifted.

5 Q. If we can turn to page 45 of the same
6 exhibit under Section 3.3.3, supply management.

7 Now, it says there that load shifting
8 options are not all on the demand side and hydraulic
9 generation is an option. And then it goes on to say in
10 the third sentence there:

11 Several smaller sites, ie. hydraulic
12 sites, are available and it is considered
13 that these will be developed when
14 calculating the need for other load
15 shifting.

16 Now, first of all - I guess I should ask
17 these of Mr. Harper - the several smaller sites that
18 are referred to there, what is being referred to
19 exactly?

20 MR. HARPER: A. I am sorry, I don't
21 know.

22 Do you know, Mr. Shalaby?

23 MR. SHALABY: A. What line is it again?

24 Q. It is in the fifth line of Section
25 3.3.3. I am wondering whether or not the several

1 smaller sites refers to the sites in the hydraulic
2 plan.

3 A. I suspect so, yes.

4 Q. Now, I was trying to understand this
5 statement and I will just pose the question: Does this
6 statement mean that the target of a thousand megawatts
7 attainable that we have talked about for load shifting
8 by the year 2000 assumes that these smaller sites will,
9 in fact, be developed? Is that how I read that
10 statement?

11 A. Yes.

12 Q. Isn't that somewhat prejudging the
13 issue? We don't know whether these smaller sites are
14 going to be approved or not.

15 A. Well, many of the planned components
16 are projecting what we see as our proposal. Our
17 proposal includes some hydraulic sites for costing
18 purposes, for energy production purposes, for avoided
19 cost purposes and also for calculation of load shifting
20 potential.

21 But you are quite right, if those sites
22 are not approved, then the plan will have to be
23 adjusted. We just thought we will put together a
24 coherent integrated plan that has all the pieces fit
25 together in a coherent way. That is the reason for

1 putting it together that way.

2 Q. Would you be able to get for me what
3 the load shifting potential would be if you didn't
4 assume that those sites were going to be developed?
5 Could I get that as an undertaking? Perhaps you can
6 figure it out quickly.

7 A. If I can't do it inside a minute, we
8 will do it as an undertaking.

9 THE CHAIRMAN: Number?

10 THE REGISTRAR: No. 261.58.

11 THE CHAIRMAN: No, an undertaking.

12 THE REGISTRAR: Oh, undertaking, pardon
13 me.

14 MR. SHALABY: Mr. Lucas has great
15 confidence in my ability to do things under a minute.

16 MS. KLEER: Pardon me, could I get that
17 number again?

18 THE REGISTRAR: 267.15.

19 ---UNDERTAKING NO. 267.15: Ontario Hydro undertakes to
20 provide the load shifting potential if
21 the small hydraulic sites are not
developed.

22 MS. KLEER: Thank you.

23 Q. If we can turn briefly back to page
24 39 of the same exhibit, under Section 3.2 again, the
25 first paragraph, it states there, the second sentence

1 from the bottom, the majority --

2 MR. SHALABY: A. Can I refer you so we
3 don't have too many undertakings on my neck here? I
4 would rather do something else in the evenings.

5 Appendix E shows how the average peak
6 hydraulic increases from about 1943 in the year 2000.
7 That can be seen in -- Table A, for example, shows
8 average peak hydraulic to be 1643.

9 Q. What page of Table A, I am sorry -
10 E7?

11 A. Table A is at page E7.

12 Q. I am sorry, could you go through this
13 again?

14 A. It shows the amount of peaking
15 hydraulic in the year 2000. I am saying the appendix
16 shows the amount of peaking hydraulic in the year 2000
17 and the amount of peaking hydraulic in the year 2008 to
18 be increasing by about 700 megawatts. If you go
19 through that appendix, the tables will indicate that.

20 Is that the kind of information you are
21 looking for?

22 Q. Well, actually, I was assuming that
23 we were talking about the period of 1990 to 2000 as
24 being the period for which you estimated the thousand
25 megawatts of load shifting?

1 A. That's correct, yes. I think the
2 only hydraulic development there that is considered
3 peaking would be the Mattagami. So the capacity of the
4 Mattagami would be roughly the increase in load
5 shifting potential as --

6 Q. So you are saying if you didn't get
7 approval for the Mattagami --

8 A. That would be added useful potential.
9 As the first order of magnitude, that would be, yes.

10 Q. And are you saying that you could get
11 that load shifting potential?

12 A. No, I didn't say that. That would be
13 a useful potential. I don't know whether we can
14 achieve the thousand plus the equivalent of the
15 Mattagami all before the year 2000. I don't know that.

16 Q. Does anyone else on the panel know
17 that?

18 I will repeat my question: Does anyone
19 else on the panel --

20 MR. WILSON: A. I don't think the rest
21 of us know the size of the Mattagami development,
22 so ...

23 MS. KLEER: All right. Well, then, I
24 will reserve that until I get to Panel 6 then.

25 I take it then that the undertaking

1 267.15 has been satisfactorily dealt with and we can
2 remove that. I am satisfied with that.

3 THE CHAIRMAN: All right.

4 MS. KLEER: Q. Now, before I was
5 interrupted, Mr. Shalaby --

6 MR. B. CAMPBELL: Just a minute. I am
7 afraid there is going to be a little gap here if I
8 don't step in. I think we have a problem in that we
9 better find out so that whoever on the panel wants to
10 speak to it can address your question about ability to
11 achieve extra load shifting because there is going to
12 be nobody on Panel 6 who, once that number is given, is
13 going to be able to answer your question about
14 achieving it.

15 I don't want to get into one of these
16 'you should have asked then because I was going to tell
17 you later' kind of situation.

18 So, could --

19 MR. SHALABY: Well, the Mattagami is
20 about 379 megawatts. That is shown on page 12-8, Table
21 12-2.

22 MR. B. CAMPBELL: And I think, Mr.
23 Chairman, in fairness - although the witnesses may not
24 appreciate me saying this - if anyone is going to be
25 able to speak to the ability to implement programs to

1 attain additional load shifting, it is this panel, not
2 subsequent panels.

3 THE CHAIRMAN: I take it this is a
4 special kind of load shifting.

5 This is making use of new hydraulic; is
6 that right?

7 MR. B. CAMPBELL: No. Unless I have
8 completely misunderstood, as I understand it what is
9 being posited is that Mattagami does not go ahead -
10 Mattagami being peaking - that additional load -- the
11 question that Ms. Kleer is raising is whether, in the
12 judgment of the panel, it is possible to put in place
13 additional load shifting efforts that would result in
14 shifting of load into the valley equivalent to the
15 peaking capability of the Mattagami which is no longer,
16 as I understand the hypothetical, in place.

17 THE CHAIRMAN: I see.

18 MR. B. CAMPBELL: Do I have that
19 correctly?

20 MS. KLEER: That is correct, Mr.
21 Campbell.

22 Q. And with that question, I need not
23 say it because I couldn't say it any better, could
24 someone - I guess it would be you, Mr. Harper - could
25 you answer that question?

1 MR. HARPER: A. I am trying to, in my
2 own mind, translate how that 400 megawatts would change
3 the total system potential - like, you know, what is
4 the potential opportunity there for load shifting?
5 Does that mean --

6 MR. SHALABY: A. Again, as a first order
7 of magnitude, it would be about, instead of meeting
8 peak demand with hydraulic, 400 megawatts of hydraulic
9 during the peak. You would want to shift that amount
10 into the valley.

11 Q. Do you need some time to consider
12 this and perhaps we could --

13 A. Maybe it is late in the day.

14 Q. I don't think we are going to finish
15 today, so maybe we could come back and address this
16 tomorrow.

17 A. Okay.

18 DR. CONNELL: May I just add to this, I
19 am still floundering a little bit in the reference on
20 page 45, the reference to 'other load shifting'. I
21 haven't been able to put that in context yet. And
22 perhaps if we could simply clarify what is that
23 allusion to 'other load shifting'; other to what? Does
24 that mean over and above the 1,000?

25 And the hydraulic provisions in the DSP.

1 it is some imagined need for load shifting beyond that
2 level, is it? I am happy to leave that with you for
3 parsing later.

4 MR. SHALABY: I suspect it is in addition
5 to the hydraulic developments. That is my suspicion
6 here. If it is any different, I will confirm that.

7 DR. CONNELL: It seems to me to read that
8 way.

9 MR. SHALABY: Yes.

10 MS. KLEER: Q. So do you have the
11 question clear, Mr. Harper?

12 MR. HARPER: A. Yes, I believe so.

13 Q. All right. Then we will come back to
14 that tomorrow.

15 All right, then just one further question
16 on load shifting relating to weekly and annual load
17 shifting. At page 39, again still of this exhibit,
18 under Section 3.2, it is indicated that annual load
19 shifting is not explored at all by Ontario Hydro.

20 Just for my understanding, could you
21 explain, Mr. Harper, what annual load shifting means?

22 A. I think within the context they are
23 talking about it here, they are talking about shifting
24 load, say, from the wintertime to the summertime
25 moving across the year.

1 Q. And that is simply not workable in
2 our kind of climate.

3 Is that the main reason why Ontario Hydro
4 doesn't look at that?

5 A. I think the idea is if you are
6 thinking about what types of activities customers would
7 want to shift, the idea of postponing and doing that
8 particular activity from the wintertime to the
9 summertime if really, the service is something you want
10 in the wintertime is something we didn't see was very
11 practical.

12 [4:45 p.m.] The other thing was is I believe there is
13 an interrogatory response that indicates that overall
14 the actual opportunity from winter to summer load
15 shifting is not that large. Something in the order of
16 200 megawatts.

17 Q. Now, with respect to weekly load
18 shifting, you state that, or this exhibit states that
19 there is -- the majority of practical load shifting
20 options shift load daily, and to a small extent weekly,
21 and then your discussion concentrates on daily load
22 shifts.

23 Do I understand that the load shifting
24 numbers that we are looking at in your plan of a
25 thousand megawatts includes some weekly load shifting,

1 or not?

2 A. There is certain allowance in a
3 sense, and we are trying to draw on studies that are
4 done in other jurisdictions in terms of looking at
5 price differentials between the peak and the off-peak.
6 To a great extent most jurisdictions define weekends as
7 being off-peak periods, similar to we've done it. Then
8 if you look at the type of response that has taken
9 place, the idea is that shifting could probably occur
10 either into the night time or into the weekend.

11 I think what we are trying to address
12 here is that for most practical purposes shifting is
13 done from the daytime to the night time. Just again a
14 sense of, if I'm an industry, and I'm trying to
15 maintain a level of production, and I'm going to shift
16 production, the easiest way is to shift my
17 production -- some of my production or certain aspects
18 of my production into the off-peak period, store that
19 material so that it can subsequently be used during
20 peak period, and other steps in the production process.
21 To only produce on the weekend and try and use it
22 during the week would obviously require significantly
23 more storage capability. So you run into limitations
24 like that.

25 Also to do it on a weekend, you would

1 have to be a customer that is operating on the weekend
2 as well as during weekdays.

3 Q. Have you explored this weekly load
4 shifting option with the customers? I understand you
5 have 40 customers that -- sorry, that is capacity
6 interruptible load.

7 With the customers that are now looking
8 at load shifting, have you explored the option of
9 weekly load shifting with them in any great depth?

10 A. No, we haven't. I think that is
11 something that they will probably themselves get around
12 to looking at very specifically, particularly when they
13 start looking at the load shifting program that has
14 been instituted for the industrial customers, in a
15 sense of looking at what sorts of storage facilities
16 they could be installing, what the capital costs of
17 those, and considering the incentives Hydro is willing
18 to offer.

19 But I think it would first be a day/night
20 type storage, and then they would have to look
21 incrementally beyond that. Is there any weekend type
22 shifting that could take place as well. But I think
23 that would come second.

24 Q. So, I understand that the programs
25 that you have now for load shifting, the time-of-use

1 rates and the thermal cool storage program, which is
2 looked at in the commercial sector, neither of those
3 address weekly load shifting at this point, is that
4 correct?

5 A. Well, they address weekly load
6 shifting in the sense that the rates are lower for both
7 Saturdays and Sundays and statutory holidays. I think
8 maybe on the thermal cool storage may be a good example
9 in the sense of typically the commercial building there
10 is cooling -- I guess it is either through ice or cold
11 water, storing basically cold air or some meaning of
12 cold during the off-peak period, so that they can then
13 draw on it during the peak period to cool the building
14 and not have to actually run their air conditioning to
15 the same extent during the peak period, if they didn't
16 have that thermal cold storage facility there.

17 To get into weekly storage of the cooling
18 would obviously require significantly more storage. I
19 think Ms. Fraser can comment in terms of the people
20 that looked at that at all.

21 MS. FRASER: A. Actually, they are
22 depending on the requirements of the building and the
23 operating characteristics. The operating strategy for
24 thermal cool storage may include sort of super charging
25 on the weekend and less charging during the week

1 relative to those, reflecting the off-peak charges.
2 Our program doesn't restrict their use of off-peak on
3 weekends, and we encourage where they can to certainly
4 do that as part of charging of thermal cool storage
5 system.

6 Q. All right, I have one brief question
7 on the supply side impacts. Now, I understand, from
8 reviewing Mr. Poch's cross, that the supply side
9 impacts of demand management have been deferred to the
10 supply side panels, and perhaps I can confirm that with
11 Mr. Campbell.

12 Is that your understanding of how it's
13 going to work in terms of supply side impacts of demand
14 management? I can refer you to the reference in the
15 transcript. I just want to make sure that that is the
16 case, because we are very interested in those.

17 MR. B. CAMPBELL: I think there was
18 certainly reference to a study that was filed that
19 looked at the Demand/Supply Plan with and without the
20 demand management component, and indicated what the
21 supply side impacts would be, if the demand management
22 component was removed. Is that the reference?

23 MS. KLEER: That's the reference. I'm
24 just trying to confirm that I can ask my questions
25 relating to that in the supply side option panels.

1 MR. B. CAMPBELL: Yes. I don't believe
2 it would be on the individual option panels as we went
3 through, but certainly in terms of discussing how an
4 overall plan would look, if demand side measures were
5 not pursued or were pursued less vigorously, that is
6 certainly something that our integration panels,
7 particularly Panel 11, would be prepared to deal with.

14 MR. B. CAMPBELL: Supply side supplies.

15 THE CHAIRMAN: Is that --

16 MR. B. CAMPBELL: That's absolutely
17 correct.

18 THE CHAIRMAN: That seems to be the
19 distinction.

20 MS. KLEER: That's fine. As long as
21 that's clear.

22 Q. I have one question relating to the
23 availability of information on supply side social
24 environmental effects.

25 In the Coalition of Environmental Groups.

1 Exhibit 270, they supplied a copy of the supply side
2 environmental effects of Ontario Hydro's demand
3 management plan, which was part of the PCRD, and I
4 think I have the reference, but it indicated in that
5 paper that the supply side social impacts were not
6 going to be dealt with in that paper, and they were
7 going to be dealt with at a later time, and they were
8 going to be put into another paper.

9 Do any one of you have familiarity with
10 the workings of that paper or the putting together of
11 that paper and know when it might come out?

12 MR. B. CAMPBELL: No, I don't know why --

13 MR. SHALABY: I think we would rather see
14 the words on that.

15 MR. B. CAMPBELL: Perhaps if I can look
16 at the reference with Ms. Kleer at the close of the
17 hearing today, we will sort out exactly what is being
18 referred to, and if there is anything else coming, we
19 will get whatever information we have about the
20 timetable for that. I'm not exactly clear on the
21 reference.

22 MS. KLEER: That's fine with me.

23 I am actually entering into a fairly
24 substantial area, so if we could end there.

25 THE CHAIRMAN: All right. Just roughly,

1 how long do you expect?

2 MS. KLEER: I suspect I will be half an
3 hour.

4 THE CHAIRMAN: And so you will start at
5 10:00, and then the Municipal Electrical Association
6 will start after you finish. They expect to spend most
7 of tomorrow, I gather, is that right?

8 MR. YATCHEW: Yes, Mr. Chairman.

9 THE CHAIRMAN: All right. We will
10 adjourn then until tomorrow morning at ten o'clock.

11 THE REGISTRAR: The hearing will adjourn
12 until tomorrow morning at 10:00.

13 ---Whereupon the hearing was adjourned at 4:54 p.m. to
14 be resumed on Tuesday, September 24, 1991, at 10:00
a.m.

25 JAS/CM/JB/RT [c. copyright 1985]



3 1761 11468139 8

80